American Engineer

AUGUST 1947

VOLUME 17 NUMBER 8

NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

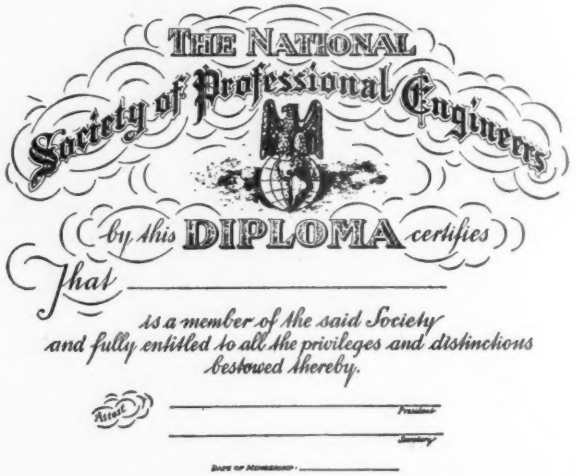
PROFESSIONAL ENGINEERS

Are you recognized by this badge?

It is a testimonial to professional integrity — a signification that the wearer is a competent professional man and that his government has faith in his ability to practice his profession.

Are you recognized as a professional engineer — as a member of the National Society of Professional Engineers — by wearing the officially adopted badge of the Society? If not, let others know of your professional interest, qualifications and affiliations by ordering one of these insignia today. Merely fill in the attached order blank and send it to NSPE Headquarters in Washington, D. C.

And since you are sending in your order, do you have membership certificates for your office and your home? If not, now is the time to get one. You will remember, it looks like this:


THE NATIONAL
Society of Professional Engineers
by this DIPLOMA certifies
That
is a member of the said Society
and fully entitled to all the privileges and distinctions
bestowed thereby.

These items, the black enamel pin or watch charm with gold lettering and the membership certificate, are yours for $7.50. They may be purchased separately: pins or charms, $5.00 plus $1.00 jewelry tax; certificates, $1.50, including hand lettering. Please enclose your check with your order, payable to the National Society of Professional Engineers.

NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS
1359 Connecticut Ave., N. W.
Washington 6, D. C.

Please send me

.....a pin insignia
.....a charm insignia
.....a membership certificate

for which I am enclosing my check in the amount of $.....to cover costs.
Please send this order to:

.....

.....

.....

I am a member of the .....State Society of Professional Engineers.

THE AMERICAN ENGINEER

Published monthly in the interests of the Engineering Profession

VOLUME 17, NUMBER 8 — AUGUST, 1947

THOMAS J. McBREEN, *Editor*

Business Manager
RUSSELL B. ALLEN

Publication Committee
C. GEORGE KRUEGER, *Chairman*
WILLIAM H. LARKIN
ALLEN HUBBARD

* * *

Publication Office
123 Market Place, Baltimore, Md.

* * *

Editorial and Executive Offices
1359 Connecticut Ave., N. W.
Washington 6, D. C.

* * *

Neither the American Engineer nor the National Society of Professional Engineers assumes any responsibility for statements or opinions expressed by contributors whose names identify the source of same.

Copyright—1947—The National Society of Professional Engineers.

* * *

Subscription Rates

$1.00 per year in advance to members of the National Society of Professional Engineering and its Affiliated Societies. $2.00 per year in advance to non-members in U.S.A. and its possessions, Canada and Mexico. Foreign, $4.00 per year. Single copy 25c.

* * *

Entered as Second Class Matter March 11, 1942, at the Post Office, New York, under the act of March 3, 1879—application pending for transfer to Baltimore, Md.

In This Issue—

Editorial	2
Committee on Industrial Problems Established by NSPE Directors	3
Emergency Utilization of Engineers To Be Studied by Military Committee	7
Public Relations, Education, Ethics Acted On by Board of Directors	8
Board of Directors and Secretaries Banquet	11
Candid Views of State Secretaries Conference	13
Legislative Committee's Monthly Report	15
Economic Status Report Analyzes "The Engineering Profession in Transition"	16
Civic Responsibilities of Engineers	18
E.J.C. Group Named to Advise State	19
Engineers Are Also Citizens *by R. M. Gates*	20
Letters from Readers	24
ASME Officials Active in NSPE	25
Rice Institute Adopts 5 yr. Plan	25
Secretary of State Honored by ASME	25
Oklahoma Committee Aids Civic Improvement	26
Engineering Education and Economic Success	27
Member State Society Officers	28
National and State Society News	29
What's New for Engineers	32

THE NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS
***Headquarters:* 1359 Connecticut Ave., N.W., Washington 6, D. C.**

Vice-President
J. F. FAIRMAN
Vice-President of
Consol. Edison Co., of N. Y. Inc.
4 Irving Place
New York, N. Y.

President
RITCHIE LAWRIE, JR.
Consulting Engineer
Partner, Lawrie & Green,
321 North Front St.,
Harrisburg, Pennsylvania

Vice-President
WILLIAM L. THRAILKILL
Asst. Gen. Mgr. & Dir.,
Wash. Power Co.
1107 W. 7th Avenue
Spokane, Washington

Vice-President
ALEX VAN PRAAG, JR.
Vice-President of
Warren & Van Praag,
447 Standard Office Bldg.
Decatur, Illinois

Treasurer
RUSSELL B. ALLEN
Professor of Civil Engineering
University of Maryland
4610 Hartwick Road
College Park, Maryland

Executive Director
PAUL H. ROBBINS
1359 Conn. Ave., N.W.
Washington, D. C.

Vice-President
ALAN GRIFFITH STANFORD
Vice-President
Robert and Company
706 Bona Allen Building
Atlanta, Georgia

EDITORIAL

The AMERICAN ENGINEER has been in a state of transition for the last few months. Many changes, designed to improve its editorial policy and format, have been made. More will be made.

With all of these changes taking place, it seems fitting that we should make a statement concerning future editorial policy of the magazine. And in making a statement of editorial policy, it is necessary to associate a publication with the purposes for which it was established.

Basis of Editorial Policy

The AMERICAN ENGINEER is the official publication of the National Society of Professional Engineers. Its editorial policy is closely related to the problems and projects with which this Society concerns itself. They are generally non-technical and deal with the social, economic, and ethical well-being of the engineering profession.

Among these will be found:

1. **Legislation:** A large percentage of the laws passed by legislatures deal with problems affecting the profession.
2. **Registration:** NSPE promotes registration as a mark of professionalism and a means of safeguarding the public interest.
3. **Public Relations:** NSPE will promote recognition of professional engineers through a vigorous public relations program.
4. **Ethics:** NSPE has approved the canons of Ethics for Engineers promulgated by ECPD as a pattern to be adhered to by all members of the profession in their dealings (a) with the public and (b) among themselves.
5. **Relations between NSPE and other Engineering Societies:** NSPE maintains a policy of cooperation with all engineering societies concerning professional problems. It does not concern itself with technical questions, but will continue to cooperate with the other groups on any problems affecting the economic, social, ethical, educational or similar aspects of the profession.
6. **Compensation of Engineers:** NSPE, through its member state societies, participates in the promulgation of minimum salary and fee schedules as a guide for fair and equitable compensation for services.
7. NSPE is of course interested in the training given young students and engineers. Professional standards of education for both student and engineers-in-training are being studied by the society.
8. **Student and Pre-professional Organizations:** NSPE believes that engineering students, early in their courses of study, should be made aware of the fact that they are entering a noble and exacting profession and that affiliation of students with the member state societies is one method of achieving this end. Furthermore, newly graduated engineers should receive recognition, and engineer-in-training affiliations with member state societies are helpful here.

Surveys and statistics about the profession, the organization of the profession, engineering practices, and problems of specialized employment are being studied by committees of the society.

NSPE established The AMERICAN ENGINEER for the purpose of: (1) discussing the above problems of the profession, (2) reporting developments concerning such professional problems, and (3) reflecting its policy.

In fulfilling these objectives, The AMERICAN ENGINEER will adhere to the democratic traditions of NSPE.

It will try to support those things which are beneficial and oppose those things which are detrimental to the profession and the public. The editorial staff is convinced that the only norm for making such judgments is to be found in the opinions of the members of the profession. We believe that professional engineers with their analytical training are competent to judge the merits of each case. Thus, it is most important that we follow a democratic policy.

We will oppose with all our power anything which is shown to be detrimental to the profession or the best interests of the public until it is eliminated and the danger removed.

We will oppose any group which takes undue advantage of professional engineers in any way.

We will try to make the pages of The AMERICAN ENGINEER clear, accurate, and fair.

We will try to be impartial and unbiased.

We will make every effort to publish articles which are authoritative and thought provoking.

We will continue to factually report developments about matters affecting the profession.

Whenever policy dictates that we should deal with matters involving the cooperation of various engineering Societies, we shall be glad to acknowledge such cooperation.

Blanket Invitation

It is our sincere desire to give full credit to any individuals or groups who are responsible for the betterment of members of the profession.

We will try to follow this editorial policy without coming into disagreement with any individuals or groups, insofar as this is consistent with the publication of a vigorous, vital, worthwhile magazine.

An open standing invitation is extended to any individual engineers, any engineering groups, or other persons interested in the profession to write us frankly as to our shortcomings or to offer constructive suggestions. We are always pleased to hear from those who agree with us, but it is most important that we hear from those who disagree.

Such communications will be carefully weighed by NSPE officials responsible for the magazine, and particularly by the editorial staff. If it is deemed in the best interests of the magazine, adjustments will be made. Furthermore, such letters as space permits will be published in our feature, "Letters from Readers," whether they be critical or whether they make constructive suggestions.

We will welcome any suggestions or comments on this statement of editorial policy.

It is our sincere desire to make The AMERICAN ENGINEER an outstanding publication which will be a credit to the profession.

Committee on Industrial Problems Established by NSPE Directors

Most important decision made at the recent NSPE Board of Directors meeting—and probably in recent years—affecting the professional status of engineers was the establishment of a standing committee to deal with industrial problems. This move is believed to be so significant that a statement of events leading up to it, together with the pertinent reports pertaining to its development are set forth here.

IN a far reaching action—the full significance of which may not have been apparent to all observers present—the NSPE Board of Directors established the mechanism for handling the problems of engineers in industry at its July 12 meeting in Washington.

Committees Purposes

A new standing Committee was established for the purpose of dealing with these, among other, problems:

1. The status of engineers under labor and wage and hour legislation and the promotion of a professional relationship between engineers in industry and their employers.

2. Relationships which exist between engineers who are employed in industry and those who function in a consulting capacity.

3. Responsibilities of the engineering profession to the public.

4. Civic duties and programs which the engineer in industry must assume and foster.

5. Means of aiding newly graduated engineers and other younger engineers in adapting themselves to a professional mien and mode of thinking.

First Step

Following the creation of the new committee, William F. Ryan, who had been chairman of the special NSPE committee on Problems of Industrial Groups said: "Engineers have been given the right (under the recently enacted Taft-Hartley amendments) to deal with their employers on a professional basis, comparable to the basis which exists between client and attorney. They have been regranted the right to deal with employers as professional men should deal with management. The newly authorized committee will maintain a constant vigilance to assure that maladministration, which some authorities say strangled the engineer under the original Wagner Act, does not pervert the newly announced intention of Congress." Thus, Mr. Ryan highlighted one of the most important problems with which the new committee will deal.

The first step leading to the formation of the new group took place at the annual meeting of NSPE last December (1946) in Atlanta. At that meeting Mr. Clark W. Ransom, chairman of the National Societies Committee of the General Electric Engineers' Association presented a proposal to the Board of Directors as follows:

Original Proposal

1. That the EJC or ECPD call a meeting of the officers of the Founder Societies and other

CLARK W. RANSOM

closely related scientific societies, and the NSPE, for the following purposes:

(A) To accelerate the progress of the work on professional and economic status, and the strengthening of the profession, by more effectively utilizing the mechanism which has been established by the National Society of Professional Engineers.

(B) To arrange for the NSPE to correlate the work on professional and economic status for that segment of the profession represented by all major societies, in addition to the present NSPE membership.

For Founder Societies

2. That the Founder Societies, and others, implement this move by:

(A) Appointing a committee to establish qualifications for a professional member grade for individuals in the field of engineering and closely related applied sciences. (This would, presumably, be similar to the requirements for registration under the "Model Law," but would include chemists, physicists, etc.) It is proposed that the committee be given a time limit of, say, three months.

(B) Reviewing the various membership lists, in terms of the foregoing definition, and identifying those members which the eligibility committee deems to meet these requirements.

(C) Taking a given portion of the dues paid by these members, identified in (B) above, and transferring it to the NSPE for a transition period of, say, three years (exclusive of those individuals who are also members of the NSPE). The members so affected would be "affiliates" of the NSPE until such time as they become resistered and join that society.

(D) Writing a form letter to each member so affected informing him that the several societies have taken this step for the purpose of fostering the creation of a Professional and Economic Division to more effectively handle these problems on all levels; and explain such steps as would be taken by the NSPE for his participation both prior to and after registration.

For NSPE and State Groups

3. That the NSPE, and its component state societies assist this consolidation in the following ways:

(A) Maintain the present single

NSPE Board of Directors debates establishing

criteria for membership, that is, registration.

(B) Extend the practice of providing an engineer-in-training grade to all states.

(C) Accept those professionally qualified individuals, who contribute funds through the Technical Societies, not as members but rather as "affiliates", and encourage their active participation in a unified nation wide program.

Official Publication

(D) Develop the NSPE publication as the official organ of the profession on matters which are common to all engineers, chemists, and closely related technical personnel; to publish the work of the ECPD, EJC, and Professional and Economic Status Committees of all the major societies; and keep the engineering body informed on current developments in these fields.

(E) Provide means whereby the "affiliates" can form affiliate chapters until such time as a sufficient number of the individuals become members to permit the formation of bona fide chapters in the respective state organizations.

(F) Provide means whereby industrial groups, designated by the NLRB as appropriate bargaining units, *which wish to waive* collective bargaining can become chapters or committees of the County Chapter of the Society of Professional Engineers, and enjoy either membership status or affiliate status depending upon whether the individuals are registered engineers. (The Technicians which the NLRB may define as a part of such groups could, of course, enjoy no status in the NSPE, but might be identified with the local chapter or committee. The handling of this situation may be of great consequence to the local groups in preventing the inclusion of professional engineers in Trade Unions against their will.)

(G) Provide a program such as has been recently described in numerous papers on this subject.[1]

4. Foster an intensive campaign to establish a sound workable definition of the profession and a sound national labor policy (either by a modification of the law [2] or by a change in the administration of the present statute). Use the definition to be derived in 2-A above, and the personnel covered by 3-A, 3-B, 3-C above, to extend the nucleus of the profession beyond that specified by E. L. Chandler (ASCE) in July 1946.[3] Perhaps, utilize the type of classification established in Canada last year [4] to avoid the absorption and domination of the professional people by nonprofessional groups.

Summary

On the local level the professional organization would consist, perhaps, of an Engineers' Council with the ASME, AIEE, ACS, and similar organizations functioning as technical divisions. The local chapter or affiliate chapter of the NSPE would constitute the professional and economic division embracing all branches

mittee to deal with industrial problems of profession.

of engineering in that particular area. Thus, by co-ordination of these groups through the Council, we would have the beginnings of a unified profession on the local level. The National Organizations of the technical societies, coordinated with the NSPE provide at least a long step towards unification on that level.

It is believed that this proposal may provide sufficiently prompt action to establish the bulwark of a strong unified profession before the present stratification has progressed to a point where that may be impossible.

K. B. McEACHRON
C. W. RANSOM

This report resulted in the creation of the special committee of which Mr. Ryan was chairman and messers. C. W. Burke of New York and Bruce Williams of Missouri members. This group reported in part in February as follows:

First Report

Your committee has carefully studied the proposal of the General Electric Engineers, and we believe that its acceptance, at least to the extent of conferring with other engineering societies, would be a constructive step towards unifying the profession in its quest for professional recognition and in its effort to improve the economic status of its members. If the fundamental objectives of the Proposal should be substantially realized, much duplication of effort will be eliminated and the individual societies cease to push their own separate programs which are often mutually inconsistent and at times even antagonistic.

The desire for a single over-all organization of the engineering profession is widespread. This is quite obviously the aim of the General Electric Engineers. The American Institute of Electrical Engineers has recently completed a poll based on a year and a half of study and discussion of four plans of organization; a plurality of the ballots favored the plan which was based on one over-all engineering society with various technical divisions, corresponding to the present major societies, but with a single professional division, representing all branches of engineering.

Engineers' Situation

An analogous program is now being consummated by the chemical profession. The American Chemical Society has a membership of 50,000 and, while it has devoted its major activities to technical and scientific subjects, it has been by no means unmindful of professional and economic questions affecting its membership. The American Institute of Chemists,

[1] One such paper is "An Immediate Measure to Strengthen the Professional and Economic Position of the Engineering Profession"—Sept. 1946 issue of ASME Journal. Another is entitled "A Program for Chemists," prepared by the Policy Committee of the Chemists Group of Chicago—Dr. A. Pantsios, 5455 S. Blackstone Avenue, Chicago, Illinois.

[2] The Taft-Hartley amendments have since been enacted.

[3] Investigation of the Causes of Labor Disputes—Hearings before a Subcommittee on Labor, U. S. House of Representatives, 79th Congress, Second Session—Part 2. (Pages 211-217.)

[4] Canadian Council of Professional Engineers and Scientists, 18 Rideau St., Ottawa, Canada—Memorandum Re: Collective Bargaining (Page 2).

which has a membership of about 2,000, is organized for the latter objectives. The Directors of the American Chemical Society have recently offered to absorb the AIC as its professional division and to turn over to it all activities in the professional and economic field. A preliminary poll of the membership of AIC has indicated that a large majority favor the proposed consolidation.

The situation, with engineers is much more complicated because there is no single engineering organization as comprehensive as the ACS. However, the General Electric Engineers' proposal, if it can be made acceptable to the several societies involved, would eventuate in substantially the same situation with engineers, in that NSPE would take over all professional and economic activities while the technical societies would return to their proper function of advancing the science of their particular field of engineering.

Recommendations

While the proposal poses major practical problems both for this society and for the technical societies, and its realization would involve some compromise and sacrifice by all of the societies concerned, it is a proposal which should be given every possible consideration. From the point of view of the ultimate benefit to the engineering profession, an unselfish cooperation by all the existing major societies may result in shortening the time by many years when NSPE will become the spokesman for all non-technical matters for the profession.

Therefore we recommend that the Executive Secretary should be instructed to advise Mr. Ransom in his official capacity as Chairman of the National Societies Committee of the General Electric Engineers' Associations that the National Society of Professional Engineers is entirely willing to consider this proposal and to meet with the officers of the other societies affected at any convenient time and place for a discussion of ways and means to advance the purposes of this proposal.[1]

Respectfully submitted,
WM. F. RYAN, Mass, Chairman
CHARLES W. BURKE, New York
BRUCE WILLIAMS, Missouri

After the submission of this report, the Special committee continued its study of the problem and then presented its final report to the NSPE Board of Directors Meeting on July 12. This report, which appends the two documents quoted above, reads as follows:

[1] The following addendum was added to the report on July 1, 1947: Since the above report was prepared the ACS-AIC merger has fallen through due to the insistence of the larger society that membership in ACS should constitute full professional qualification. On the other hand, the physicists have completed an arrangement by which all members of American Physical Society, Optical Society of America, Acoustical Society of America, American Society of Physics Teachers and Society of Rheology become automatically members of American Institute of Physicists which will deal exclusively with the economic and professional problems of that profession.

General Electric Schenectady Plant

Schenectady engineers followed lead of other G.E. employee engineers in seeking professional representation. Thy have adopted Ransom plan.

Final Report

We attach a copy of the proposal which Mr. Ransom presented for the General Electric Engineers' Associations at the Atlanta meeting.[2] This proposal was the result of intensive study of the problem of engineering organization by groups of young engineers at four plants of the General Electric Company in Lynn, Pittsfield, Schenectady and Fort Wayne. Since the proposal was presented another group of engineers at the General Electric Company Works in Syracuse has organized a similar association, and the five units comprise a loosely knit organization for study and action on mutual problems.

These groups were originally formed partly in self-defense against unionization. They have been very successful in maintaining a highly professional attitude among their members. They have no desire for collective bargaining; on the other hand, they have professional and economic problems which they feel transcend the ability of engineers to put over individually and they are working for comprehensive action by the profession as a whole which would make collective bargaining by engineers unnecessary.

Group Activities

All of these groups, as a result of their studies, have recognized the importance of professional registration. In fact, the Syracuse group makes registration a requirement for full membership in their organzation. Nearly all of the group in Lynn are registered or have applied for registration. The group in Schenectady has organized refresher courses to assist their members in passing the New York examination and between 200 and 300 of them are taking the next examination. A large number of these men have joined the National Society of Professional Engineers and many more will do so as soon as they are registered. Almost without exception they are members of the AIEF or other major technical societies, and they find it burdensome to be required to join several societies in order to satisfy their technical and professional needs. In common with the majority of the members of the AIEF, as shown by the recent poll on professional organization, they would like to see some coalition or affiliation of technical societies for more effective professional and eco-

[2] See first document reproduced in this article.

Emergency Utilization of Engineers to be Studied by Military Committee

During World War II many competent engineers were used in positions which made no demands on their technical skills while many technical positions were filled with men who needed much training. The NSPE Military Affairs Committee Report deals with this problem among others.

The NSPE Military Affairs Committee has been commissioned to draft a program to assure the prompt and most effective use of engineers in any future atomic, supersonic war in which the United States may become involved.

This new function was assigned to the Committee by the Board of Directors' action in approving the Committee's report at its July 12 meeting.

The report also recommends that NSPE voice its opposition to certain legislation and that it develop a constructive legislative program to deal with the problems of military engineers as well as civilian practitioners.

The text of the Military Affairs Committee program is as follows:

1. Immediate Action:

Opposition to the following legislation now pending in Congress because it directly or indirectly affects engineers. In some cases, as HR 3215, engineers outside of the army are vitally affected:

(a) HR 2536 (or 2537) and S 904, which provide for the appointment of Chiefs of Services by the Secretary of War from among general officers of the army. This may result in the appointment of a chief of engineers lacking in engineering and administrative qualifications.

(b) HR 3172 (or 3174) and S 1104, which grant greatly increased pay to medical officers of the army, something like $1200 per year for not to exceed 30 years. This is the so-called "Santa Claus" bill. It should be based on the broad needs of the army and not on hasty and ill-considered favoritism for only one of the professional groups in the army.

(c) HR 3215 which creates the Medical Service Corps of the army. Aside from its unsound provisions for the use of engineers, and its discriminatory provisions in regard to promotion, this bill will adversely affect the status of engineers in the Public Health Service and, in fact in all health work.

2. Short Range:

An organization to meet the problems that are likely to arise, in respect to engineers in the military services, at the next session of Congress. This organization should be able to:

(a) Effectively oppose legislation adversely affecting engineers.

(b) Develop a program covering favorable legislation for engineers to correct existing inequities.

3. Long Range:

Studies by the Committee to formulate appropriate recommendations to the National Society covering:

(a) The utilization of engineering personnel in the military services. Many qualified engineers, despite the shortage of engineers, were not utilized during the war by the military services in engineering work, while non-engineers were sometimes used in positions requiring engineering training and experience. It is believed that in another emergency engineering and scientific personnel will be still more important and critical, and that wastage and misuse must be prevented.

(b) Military-civil engineering relationships, with special emphasis on peace-time conditions. There is a tendency in time of peace for military engineers to lose contact with many civilian engineering specialties, while civilian engineers too often pay little attention to military engineering needs and problems. It is necessary for quick and efficient utilization of civilian engineers to maintain a closer liaison and understanding between these groups.

(c) The possibilities of creating an organization that will insure a better utilization of engineers during national emergencies. It will certainly be desirable and it may be necessary to determine military and civilian priorities for engineers according to over-all national needs, whether in the military forces, or serving industry or government. The medical profession did a fair job of this during the war, and the Sanitary Corps did it with sanitary engineers. There is no reason why this program cannot be applied on a broad scale to the engineering profession.

It is recommended that the Board give approval of the above program.

Respectfully submitted,

W. A. HARDENBERGH,
Chairman

SAMUEL I. SACKS
ROBERT COLTHARP

---

nomic, as distinguished from technical, activities. They believe that NSPE should be the focal point for such activities, and should have the support of other societies. This, together with concern for the young engineers or Engineers-in-Training, is the fundamental *basis* for the proposal as presented.

Representatives of the General Electric Engineers' Associations feel that the NSPE under existing conditions can not be the sole answer to their problem because little definite provision is made for young engineers during the period between graduation from college and the development of full professional status. It is their belief that the young men should be allowed to work with the older men for professional objectives during their training period, and that any overall society should undertake to represent Engineers-in-Training as well as Professional Engineers. While this committee was appointed to consider the specific proposal of the General Electric Engineers' Associations, we have deemed it wise to expand the scope of our recommendations to cover more broadly the problem of the Engineers-in-Training and engineering organizations for professional objectives. We therefore specifically recommend:

Recommendations

1. That NSPE take definite steps to recognize candidates for the engineering profession, both as students and as Engineers-in-Training. We believe that the NSPE should expand its program to provide for the professional development of the younger men during their period of study and apprenticeship. To further this proposal your committee

(*Continued on Page* 24)

Public Relations, Education, Ethics Acted on by Board of Directors

Other important problems considered by the Board of Directors at their recent meeting in Washington included public relations for the engineering profession, education problems, ethics and professional practices, and proposed changes in NSPE's constitution and by-laws.

The Public Relations Committee submitted the following report which was unanimously adopted by the Board of Directors:

Chapter Guide

In setting up a public relations program for our society, an outline of activities, tentatively shown as set out hereunder, can be used by each chapter as a guide. However, no such program can ever succeed unless an appeal is made to the members for them to give something to the profession as individuals. They owe something to the profession and naturally the greater their leadership, the greater is their debt. The support and activities of these natural leaders must be enlisted and others will be encouraged to follow with increasing activity. Just as charity begins at home, so a sound public relations program must have its inception within the society membership. Thus our profession can be unified through our society, the only engineering organization with a hope of unification.

Engineers have independent minds and are prone to be egregious. They must overcome this tendency to not band together.

Publicity's Place

The Texas Society has performed outstanding service in its public relations activities.

We must dismiss the thought, held by so many people, that the principal element of public relations is publicity. Publicity plays its part in the program but other elements combine to be more important.

We have a definite challenge to promote friendly relations in behalf of professional engineers, among engineers themselves and also among the people in general.

I. NATIONAL LEVEL

A. *Publicity Releases From Headquarters*

There are potent items of human interest concerning the engineering profession which can best be released on a national level by NSPE Washington Office. Through press services these releases will reach local levels. National engineering projects should be stressed and emphasized concerning their benefit to humanity and public welfare.

B. *Legislative Committee and Analyst*

(a) Send Bulletin to State and Local Chapter Presidents and National Directors.

Without any doubt the work of the legislative analyst in Washington has been an inspiration to all engineers who have been thus kept in contact with legislation in Congress. Each state should publish for its members a condensed version of the various analyses and members having this information can disseminate it among engineers who are non-society members and use this as one means of selling memberships, if you please. There will naturally be a close coordination of the work of the legislative committee.

C. *Labor Relations Committee*

(a) Publicity of Activities.

In the past six months the activities of the legislative analyst has been more or less centered on labor bills. Through the labor relations committee publicity should follow the passage of any bill affecting the labor rights of engineers.

D. *Economic Status Committee*

(a) Publicity of Activities.

The same may be stated concerning publicity of the activities of the Economic Status Committee stated under C.

E. *Relations With Other Engineering Organizations*

Throughout the country, engineering organizations other than the NSPE are legion. However, while some are probably not in the true category of engineering, they all have lofty aims.

Close relations should be engendered by the NSPE with other engineering societies whose members really are engineers, to the end that eligible members of such groups will learn the value of an overall society to represent them truly and efficiently as a single organization.

Other Organizations

F. *Relations With Other Professional Organizations*

It is believed that much can be gained by NSPE by following precept and example set by national organizations other than engineers.

I am indebted to Mr. Frank W. Chappell, Chairman of the Public Relations Committee of the Texas Society, for some excellent suggestions along this line contained in the progress report of the Texas Public Relations Committee. He comments that doctors beat us four to one on publicity. They overlook very little, if anything, in having articles in the public press from alleged nostrums to actual cures. We should seek to glamorize the professional engineer through sponsored programs the same as AMA builds up the doctor. Many large corporations and trade associations look to the engineering professions for the wide-spread use of their products. Why shouldn't the U.S. Steel Corporation or Portland Cement Association and others sponsor a radio hour or half hour, setting out in a sympathetic light the role that engineers play in the drama and tragedy of life?

The doctors' programs picture the doctor as wise, kindly and marvelously skilled in treating human ailments, but the life, health and welfare of the man in the street would all be impaired beyond aid by doctors or anybody else were it not for the work of the engineers. In such instances it is a realization of the truth of the axiom, "An ounce of prevention is worth a pound of cure."

G. *American Engineer*

The American Engineer can be an instrument of great value once it is well established. Worthwhile articles by prominent engineers should appear in

each publication. Placing the publication in state and university libraries will broaden the scope of coverage.

II. STATE LEVEL

A. *Stress Relations Among Own Members*

On a state level there is ample opportunity for better relations among members.

B. *Relations With Other Engineering Organizations*

In every state there are other engineering and technical societies with which our members should make contact. Joint meetings with other societies have been held with success.

C. *Relations With Other Professional Organizations*

Relations with professional societies other than engineers should be encouraged, and problems of mutual interest solved.

D. *Relations With State Registration Board*

In certain states there is not close cooperation between the state society and the state registration board. The state society should make efforts to have appointed, to the registration board, men who are adapted to such work—men whose interest in the operation of the board is thorough and sincere. Much could be stated here on this item.

E. *Chapter Public Relations Committee*

(1) Publicity:
- (a) Press
- (b) Radio
- (c) Speakers
- (d) Chapter Publications
  - (1) Publish short resumé of legal analyst's reports.
- (e) Notice of meetings and news story of meeting and review of speakers' addresses.

Each state chapter should have a public relations committee and a competent chairman, all of whom will work together in the interest of the society. This committee could very well handle all publicity and thus eliminate the necessity of a committee for publicity purposes only. Publicity will include the dissemination of information through the press, radio and chapter publications. Competent speakers should be engaged for chapter meetings and furnished to other organizations. There can easily be press publicity given such as notices of meetings and a short resumé of the speaker's address. Representatives of the press should be cultivated especially by the chairman and it will be revealing the cooperation which can be obtained.

F. *Activities of Natural Leaders In Chapter*

Every chapter has its natural leaders who are available for talks to other organizations, in which the human side of engineering can be set forth to non-engineers.

G. *Engineers-in-Training*

One of our greatest fields for public relations activities will be among our young graduates, eligible for certifications as engineers-in-training, in those states where such a law is in effect. Every chapter in a state without such a law should cooperate with the registration board at the next state legislative session and have introduced a bill providing for engineers-in-training.

Legislative activity is foreign to most engineers, but there certainly are key men in each state who could be made responsible for promoting such a bill. It is not an easy task and requires a tremendous amount of time to carry a bill from introduction to passage, unless some kindred spirit among the legislators in each house can be so "sold" on such a bill as to sponsor it successfully.

We must leave a heritage to younger men in the profession and to future generations, in part payment, at least, of the heritage that has been handed down by previous generations to the engineers of today.

H. *Registration*
- (a) Publicity
- (b) Personal contact with board

Many engineers have to be "sold" on the value and benefits of registration. The Registration Board can assist by giving publicity to its meetings and the names of the new registrants. A closer personal contact should be made by members of the NSPE with the board members.

I. *Society Membership*
- (a) Advantages
- (b) Salesmanship
- (c) Unity in Profession
- (d) Constant Program for increasing membership

While it is my belief that, under our constitution, the chairman of the public relations committee must be a member of the Society, it is my further belief that engineers, as a rule, are not trained as public relations experts and actually a member of the Washington staff with such experience should be the guiding light. He could have the cooperation of the committee and its chairman, always amenable to their suggestions.

Furthermore, states with a large membership could well employ a person skilled by training and experience, in this line of work on some satisfactory annual fee basis. Frank Chappell, Texas Public Relations Chairman, holds this same opinion.

By having a member of the Washington staff actively so engaged, he could have the time to contact state chairmen, learn how they have solved local problems, and set up a program from the national level.

Respectfully submitted,
Public Relations Committee

Paul H. Robbins, NSPE Executive Director, has been appointed Director of Fellowships for Tau Beta Pi, honorary engineering fraternity.

In this office, with the aid of a fellowship board of three, Mr. Robbins will select annually about six men to receive Tau Beta Pi fellowships for graduate work in engineering at the colleges of their choice. It is general practice that the colleges chosen by those selected for fellowships waive tuition charges.

The report of the Education Committee which was unanimously accepted by the Board of Directors presents an interesting recapitulation of responses to NSPE's offer of aid to Deans of Engineering Schools in establishing the five-year curriculum.

The full text of the report is as follows:

The Washington Office of the Society sent to the Heads of Engineering Colleges in the United States, the letter which was approved at your meeting in Minneapolis last February.

Seventy-five replies were received. Mr. Paul Robbins classified these replies as follows:

27 for the 5 year plan as recommended by our Society

(*Continued on Next Page*)

23 acknowledgements of our letter.

25 against the five year plan

Copies of these letters were furnished by the Chairman to the members of the Education Committee with the request that they report back to him. Reports were received from all members of the Committee except Mr. Bosworth.

All members of the Committee who reported recommended that NSPE continue its efforts to have the five year plan adopted.

Professor Nold advised that he did not think that the letter which was sent out was in the best form.

Dean Withey of Wisconsin University, advised that he classified the replies as follows:

35 are using or favor continuance of the four year plan.

16 have in prospect or favor the five year plan.

14 have failed to make any decision as yet regarding the five year plan.

12 have made no plans to adopt the five year plan although the persons responding to the inquiry express sympathy.

24 indicate that they accomplish the underlying purpose of the five year program by providing adequate graduate instruction.

35 indicate that they are giving substantially 20 per cent of the curriculum to an humanistic band of subjects essentially as suggested by our Committee.

Trend of Times

Dean Withey and Dean Weil attended the annual meeting of the American Society for Engineering Education, which was held in Minneapolis June 17 to 20. Your Chairman discussed the matter at length with both of these gentlemen and they expressed the view that we are on the right track, that it will take time, but that it is very much worth while and something that is in the trend of the times.

Your Chairman was invited to present a paper at the A.S.E.E. meeting on the subject, "Training Engineers for a Profession." This paper was presented at a meeting of the Mineral Engineering Section, Friday afternoon, June 20. It was the lead paper in a panel discussion of Engineering Curricula. The paper was well received and there was a good discussion.

At the close of the four day sessions, the Minneapolis Star commented as follows:

> "Need for integrating social studies into the over-all thinking and planning by men of science was stressed anew at today's general session of the American Society for Engineering Education."
>
> "Various aspects of the same theme have been drummed at by numerous speakers since the start of the Conference.

Until someone proves otherwise, your Chairman will claim that the letter which NSPE sent out to the educators was in part responsible for the trend of the discussions.

Minimum Requirements

Dr. Gould, President of Carlton College, was the principal speaker at the dinner Friday evening, June 20. Practically his entire address was devoted to stressing the need of broader education for engineers.

In my paper I called attention to and emphasized the fact that NSPE as I understand it, is urging the five year plan as the minimum requirement for graduates who are to receive a degree with the word "engineer" or "engineering" in it. Also that we are not concerned with the type of degree that is given for a lesser education, provided it is not an engineering degree. Many of the educators who replied to the NSPE letter seem to have missed that point. I believe that Mr. Robbins should stress this point in his future correspondence on the subject, and that our representatives and members who discuss the matter with educators should be careful to make this point clear to them. I was commended by several of the educators who heard my paper for making this point clear.

Minnesota Degrees

At the University of Minnesota a bachelor of science degree without designation is given at the end of the 4 year course. At the end of the 5 year expanded course the engineering degree is given, bachelor of science in—engineering.

I am advised that Dr. Croft, past president of A.S.E.E. urged their Committee to approve the 5 year plan, but that the Committee voted to stick to the 4 year plan for the present. That was a defeat for the 5 year plan, but not without hope.

Respectfully submitted,
Education Committee

A preliminary report was submitted by the Ethics and Practices Committee dealing with "ethics and professional practice on fees for engineering works designed but not constructed." The Committee report which was adopted unanimously, follows:

The Committee has been requested by the National Society to investigate the current practice and, if possible, make recommendations concerning the basis of payment for engineering services on projects for which designs and specifications have been completed, but which projects are no immediately (and possibly may never be) submitted for bids.

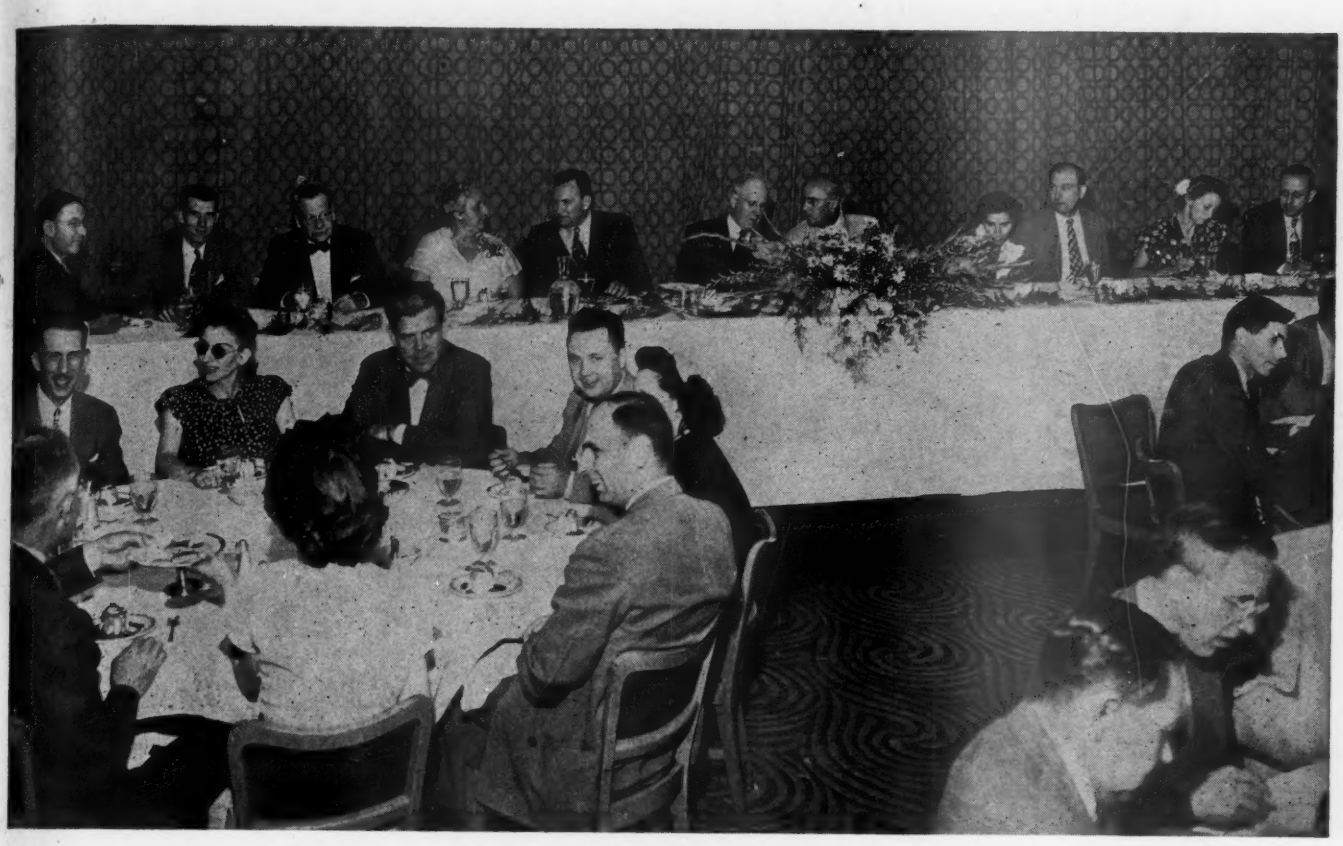
As a preliminary step the Committee has contacted engineering firms and State officials in several States in order to obtain a sampling of practices and opinions on the question. We now feel that a preliminary report is in order with the hope that further information and opinion will result. It is not our intent to do any more than to submit the facts and opinions which we have gathered.

Construction Percentage

In general fees are based on a percentage of the construction price. The percentage being that established locally in a Schedule of Fees. Of this amount, from 60% to 70% is receivable at the time the plans and specifications are submitted to the client, the construction cost used at this time being the engineer's estimate. The balance, which may be considered a fee for supervision during construction, is adjusted on the basis of the actual bid so that the final fee is in fact a fixed percentage of the actual cost.

Since design costs are not fixed but tend to increase or decrease along with variations in construction cost the length of elapsed time between the design and the construction of a project imposes a hardship on either the engineer or the client when fees are adjusted to the final contract price. The longer the elapsed time the greater the hardship imposed. It is the concensus of opinion of those contacted that when the fee is adjusted to a contracted price of construction the elapsed time should be restricted to a period varying in length from three to twelve months. In those cases in which the elapsed time exceeds this period of time the payment for design and specification work should be independent of the supervisory fee, the former being based on the engineer's estimate and the latter based on the contract amount if and when the project is consummated.

Board of Directors and Secretaries Banquet



View of Speakers table at NSPE Dinner

View of Statler's Pan American Room during NSPE Banquet

State Secretaries Recommend Administrative Changes to Board

Friday, July 11, preceding the Board of Directors meeting, the Conference of State Secretaries of NSPE members, met in the Presidential room of the Statler Hotel in Washington.

While this group has no actual authority, it does represent the "operating level" of NSPE and the various member state societies. As such, it has been constituted to make recommendations to the NSPE Board of Directors and consequently, is an important cog in the wheels of administration.

Among the topics considered by the Secretaries Conference were: membership promotional activities, a revised membership certificate, chapter activities, engineers-in-training, the registration pamphlet, the Legislative Bulletin, and delinquency. Just before the close of the meeting, it was suggested that the state secretaries conferences be allotted more time on future agendas of meetings. After some discussion, no definite action was taken.

Membership promotional activities: Mr. Ledbeter of Texas reported on the membership promotion plan used by the Texas Society stating that the main line of attack is a series of letters and informational material directed to each registered professional engineer in the State. The second phase is the follow-up. The first mailing of the letters was in May and 3700 registered engineers were covered. With the other promotional material there was also an application blank. Other parts of the plan include talks to college students and sending out a news letter on National Legislative activities. A news letter covering Texas' legislative activities will also be used. A news letter on public relations from the national office is expected later on. The program is coordinated with the national membership program and is based on a continuous campaign of letters and literature prepared on a professional basis, followed by personal contact.

Professor Babbitt of Illinois discussed some phases of the Illinois membership campaign, mentioning the employment of a full-time field secretary, who is making extensive personal contacts.

Mr. Barrows of New York, pointed out that his State has a difficult problem in that they have about 14,000 engineers not affiliated with the society and sending literature to such a large number is extremely difficult, requiring a selective campaign.

Mr. Dodge of New Jersey pointed out that there is another 50% potential for membership purposes in the form of engineers qualified for registration but not yet registered, and discussed facts of the New Jersey membership activity.

Mr. Wagner of New Mexico reported briefly on the membership work in the newly organized New Mexico Society.

There was a general discussion of membership increases by percentage, potential membership and other methods of computation, as well as various promotional activities of the states.

Revised Membership Certificate: Mr. Robbins asked for comments on a Revised Membership Certificate. Mr. Spence of Massachusetts recommended that it be prepared without a space for chapter designation and optional elimination of the state society seal. Mr. Robbins explained that there will be two certificates—one with a space for chapter designation and another without such space. The seal will also be optional. It is planned tentatively to distribute the certificates to the state societies with the national seal and signatures of national officers affixed and have the state distribute from that point on.

The certificates will cost between 25c and 35c each. They will be sold to the states at cost in whatever quantity is desired with appropriate national signatures. Mr. Dodge suggested this program be moved toward the latter part of the year, since the states have not provided for this expense in their budgets.

Mr. Reed of Connecticut raised the point concerning a person continuing to display the certificate after his membership has ceased and Professor Babbitt of Illinois suggested that Illinois now includes a statement on the certificate terminating it as of the date shown on the membership card.

Mr. Dodge of New Jersey stated the chapter officers in New Jersey would want to affix their signatures and Mr. Robbins stated he thought this could be done by moving the position of the "Date of Membership."

It was moved, seconded, and carried, that there be a uniform certificate showing state and/or chapter affiliation with space allowed for signature of chapter officers, if desired.

Chapter Activities: Professor Babbitt of Illinois led this discussion and quoted the rules followed by Illinois in the establishment of chapters. He discussed the problem of competition from Engineering Councils and stated it is difficult to organize chapters in Illinois at present.

Mr. Spence of Massachusetts discussed problems encountered in Massachusetts in chapter work and recommended promotional work on engineering students as potential members. He also discussed the difficulty encountered from local Engineering Councils as impediments to chapter organization.

Mr. Chacey of Ohio and Mr. Dodge of New Jersey also discussed the problem of Engineering Councils and other phases of chapter organization.

Mr. Fuller of Pennsylvania stated that in Philadelphia the problem was met by taking an active part in the Council work and thereby having a hand in its direction.

The morning session of the Conference adjourned at 12:05 to reconvene at 1:30 P. M.

Engineers-in-Training: Mr. Barrows of New York set forth the background of the New York law and developments leading to the formation of a separate Engineer-in-Training organization in New York, under the sponsorship of the New York Society, but as an autonomous unit. The New York Society loaned the money to start the Engineer-in-Training Organization and gave other assistance as needed.

On a query by Mr. Robbins it was noted that 16 Societies provide affil-

Candid views of State Secretaries Conference

Top, left to right, George Barrows (N. Y.) and Vincent Di Mase (R. I.); Richard R. Price (Minn.); R. L. Sweigert (Ga.) and Executive Director Robbins. Center, general view of conference. Bottom, left to right, the New Jersey delegation, including Charles Dodge, Ruth Wentzel, alternate director McGee and Merton S. Adams; Harold Bruegging (Mo.); and Lloyd Chacey (Ohio), Prof. H. E. Babbitt (Ill.) and John Ledbetter (Texas).

iation for Engineers-in-Training and three do not.

Dr. Price outlined the situation in Minnesota in this respect and stated that MAPE now has a junior membership provision.

Pamphlet on Value of Registration: Mr. Robbins gave the background of the preparation of the pamphlet by Dean Dougherty of NCSBEE, and indicated it has received a very favorable reception in all quarters. Mr. Trefry of Michigan outlined the use made of the pamphlets in that State and suggested it should be re-titled so as to allow distribution with better results to non-registered engineers. Mr. Robbins stated that NSPE had printed 20,000 copies, with less than 3,000 copies remaining on hand. It is anticipated that it will be reprinted for the next graduating class.

On motion of Mr. Ledbetter of Texas, seconded by Mr. Johnston of West Virginia, it was moved and adopted that the Board of Directors of NSPE give consideration to reproducing the pamphlet in sufficient quantities to meet the needs of the various member state societies in campaigns directed toward securing the registration of qualified engineers not now registered.

Legislative Bulletin: Mr. Robbins outlined the present distribution of the Legislative Bulletin and asked the secretaries to see that one copy of the Bulletin gets into responsible hands in each chapter. Mr. Dodge of New Jersey described the use made of the Bulletins in his State and recommended the addition of Vice Presidents to the mailing list. He also discussed the use of the Bulletins at the chapter level. Mr. Dodge recommended that the results of the legislative referendums be noted in the Bulletins and that state legislation should receive more attention. It was also recommended that a summary and topical index be prepared at the end of each legislative year. Mr. Dodge also discussed the legislative program in New Jersey and the part played by the New Jersey Society.

Mr. Barrows of New York recommended that state societies publishing legislative bulletins make exchange arrangements and it was noted that five States publish such bulletins (Ohio, New Jersey, New York, West Virginia and Illinois). Wider distribution of the Bulletin was also discussed and several state societies indicated they publish portions of Bulletins in their publications.

Delinquency: There was a general discussion of the problems encountered in connection with delinquency in payment of dues and the procedure in dropping such persons from the mailing lists and the rolls. Dr. Sweigert of Georgia read a petition of the Georgia Society that there be a period of six months for arrears and three months for delinquency after that.

Mr. Robbins quoted figures at the National level showing that many memberships were saved by the delinquency provisions of the National constitution.

Mr. Ledbetter of Texas moved that the secretaries recommend to the NSPE Board that it, in turn, recommend to the states, and amend the National constitution accordingly, to the effect that members who have not paid their dues at the end of the current year be dropped from the mailing list and from the membership rolls. This was seconded by Dr. Sweigert of Georgia.

Following the meeting of the State Secretaries and preceding the meeting of the Board of Directors a banquet was held for members of both groups in attendance. Senator George W. Malone of Nevada and Congressman George P. Miller were guests of the Society. Both made brief talks.

Industrial Problems Committee

(*Continued from Page* 6)

recommends the following specific steps by the Board of Directors:

a. Recommend to all State Societies and also to the National Council of State Boards of Engineering Examiners and the American Society for Engineering Education the active promotion of professional concepts and ideals throughout the entire course in all engineering institutes and colleges.

b. Ask all State Societies to promote legal certification of Engineers-in-Training.

c. Recommend to the State Societies that have not already done so that they make provision in their constitutions and by-laws for acceptance of registered Engineers-in-Training as associate members or affiliates and invite the active participation of Engineers-in-Training in the discussions of professional problems, particularly in the Chapter meetings.

d. Refer to the Committee on Constitution and By-Laws consideration of amendments which would make it possible for certified Engineers-in-Training to become affiliated with the National Society.

2. We confirm our draft report of February 1947, copy of which is attached, concerning the proposal of the General Electric Engineers' Associations in regard to cooperation of NSPE with certain technical societies or professional and economic objectives. This report recommended that NSPE announce its willingness to discuss the proposal with authorized representatives of the societies now members of Engineers' Joint Council, or with authorized representatives of any three of these societies.

3. We recommend the appointment of a Committee to correlate and publicize the activities of other engineering societies in matters relating to professional organization and the economic welfare of the engineer, and to coordinate these activities with those of NSPE. It is further recommended that this committee be composed of nine members, of whom at least five are employee engineers, representing the younger members of the profession.

Respectfully submitted,
W. F. RYAN, Mass.,
Chairman
C. W. BURKE, N. Y.
BRUCE WILLIAMS, Mo.

The report was unanimously adopted by the Board of Directors. Following its adoption, the special committee was discharged with the understanding that the newly created committee of nine would take over any additional organizational work which might have to be done. It was further understood that President Lawrie would consult with Mr. Ryan as to the membership of the new committee before making final appointments.

The appointments have not been made as yet, but it is expected that they will be announced in the near future.

Legislative Committee's Monthly Report

Dear Fellow Member:

The first session of the 80th Congress has adjourned. It has been an extremely active and important session to those interested in legislation affecting professional engineers.

The next session of the 80th Congress will likewise be important to the profession. It is always hazardous to attempt a forecast of what subjects will come up in the National Legislature, but at the risk of being wrong we should like to submit a few items of importance to our profession which are likely to occupy the attention of our solons at their next meeting. These few items are presented, not only as a matter of information, but more importantly to stimulate your consideration of them in order that NSPE may be prepared to represent its members' views if called upon to do so.

St. Lawrence Seaway

In the offing there is one of the greatest engineering projects in history—the St. Lawrence Seaway. This project has been the subject of much study, lengthy hearings, and intense disagreement for many years. It appears now to be closer to approval than at any time in the past. In addition to the approval given by President Truman it has the powerful backing of Senator Vandenberg and Senator Barkley, in addition to numerous other members of Congress. On the other hand it is strongly opposed by many interests and industries who feel that it is economically unsound and would damage many industries and areas of the nation. Unlike previous moves to obtain approval of the Seaway the current proposal seeks to make the project self-supporting and self-liquidating in both its navigation and power phases. The Senate Foreign Relations Committee, after a hearing on the subject, has approved the project by a vote of 9 to 4. However, it was decided not to issue the Committee report until the next regular session of Congress, when it is expected the question will be fought out on the floor of the Senate, and then in the House of Representatives.

Valley Authorities

The recent wave of disastrous floods in the mid-West have pointed up the forthcoming battle over the creation of additional Valley Authorities, patterned after the TVA. A number of bills have already been introduced proposing valley authorities in various sections of the country, with most attention being given to a Missouri Valley Authority. The President has injected himself into the controversy with his message of July 16, dealing with the necessity for immediate action to prevent a recurrence of flood disasters. The President gave tacit approval to the so-called "Pick" Plan of the Army Engineers to build a series of dams and levees in the Missouri, Mississippi, and Ohio River Basins, while at the same time endorsing the creation of a Missouri Valley Authority at a later time. The President has proposed a ten-year program for the job with an immediate outlay of $250,000,000.

Proponents of the MVA and other valley authorities say the adoption of this plan will mean undue delay in obtaining the valley authorities and will undoubtedly make a strong fight to convince Congress that the authority approach is the more sound and economical plan in the long run.

Advance Planning

We have reported on the Advance Planning program of the Federal Works Agency from time to time in both the Legislative Bulletin and in this column. The program of financial assistance to States and municipalities to aid in the planning of public works projects ended on June 30, 1947 when the War Mobilization and Reconversion Act expired. Therefore, the program is officially dead, but a move is underway to revive it on substantially the same basis that previously existed. Bills have been introduced in both the House and Senate to accomplish this end and the Senate bill has progressed to the point of a hearing before the Senate Committee on Public Works. Both bills authorize up to 50 million dollars per year for the program. Major General Philip B. Fleming, Administrator of the Federal Works Agency told the Senators that the program has won the almost unanimous support of State and local officials, engineers, architects, contractors, economists, and the general public.

RAY M. FULLER

Lower Costs

He urged the continuation of the program because Advance Planning makes for lower construction costs and pointed out that when plans are prepared in advance they can be executed at a time when they will synchronize with other measures in connection with employment and production. The FWA Administrator cited the fact that generally a city desiring to build a public works project must submit the proposal to a referendum which, if approved, allows bonds to be sold to pay the costs. With some of the money engineers are employed to plan the improvement and then a year or two later construction begins. Meanwhile, he pointed out, the city is paying interest on the borrowed money. Under the Advance Planning program the Federal Government loans enough money to draw up the plans which is then repaid, without interest, when the project starts.

Opponents of this program base their opposition upon two primary grounds. First, although the money advanced is to be repaid when construction starts there is no assurance the project will ever be commenced, in which case the money is not repaid; Second, there is no necessity for further advance planning as there is already a large surplus of public work plans which cannot be completed for many years to come.

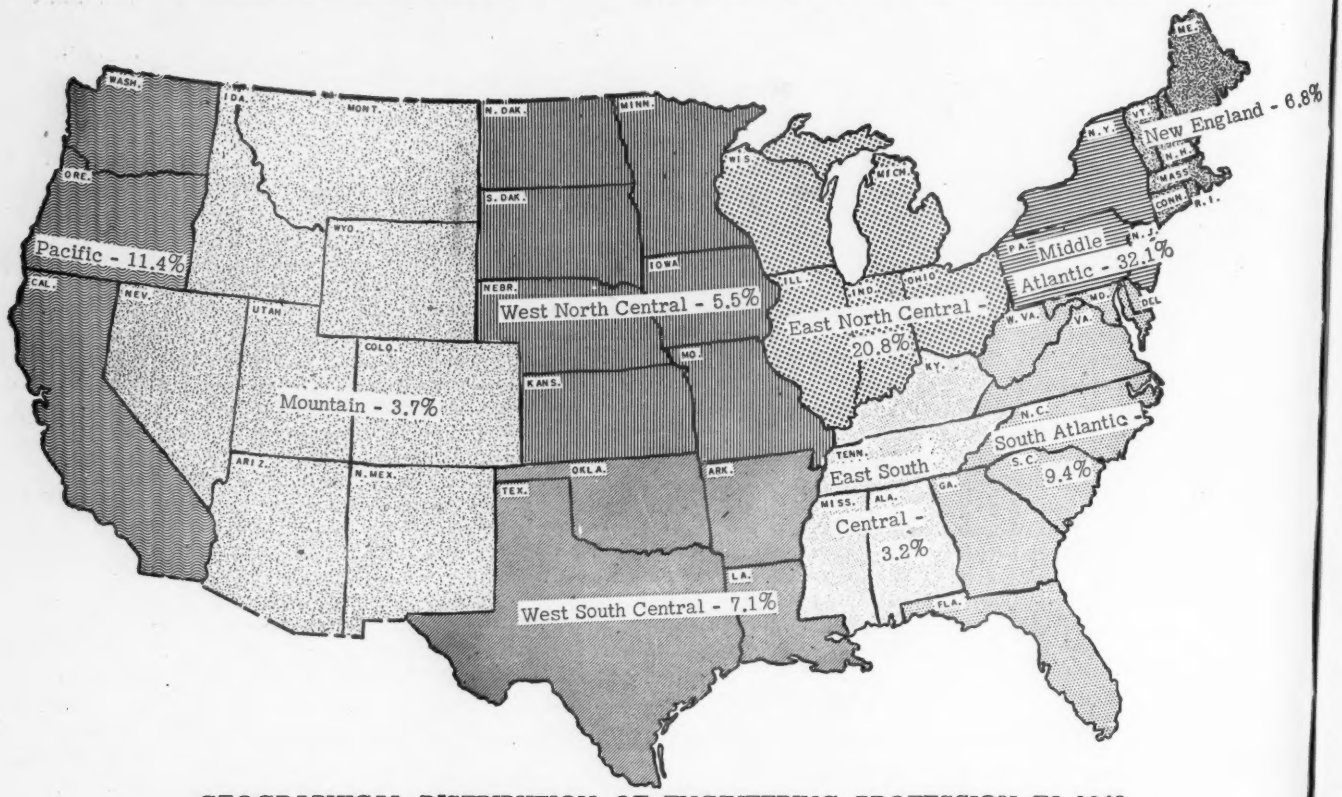
These are some of the items which may occupy our attention in the near future. Your suggestions and opinions are earnestly solicited. Obviously the discussion of these important items is brief and incomplete in respect to the details. Those desiring additional information for further study are invited to convey their requests for such information to the Washington Office.

Cordially Yours,

RAY M. FULLER

Economic Status Report Analyzes

THE ENGINEERING PROFESSION IN TRANSITION



GEOGRAPHICAL DISTRIBUTION OF ENGINEERING PROFESSION IN 1946

The above map, based on the Andrew Fraser study discussed below, shows that over 50 percent of the engineering profession is concentrated in the Middle Atlantic and East North Central states. This distribution is probably the result of the heavy industrial concentration in these states which provides much employment for electrical, chemical, and mechanical engineers as well as some jobs for other groups in the profession. It is also significant to note that these areas are highly conscious of professional problems, as indicated by the high proportion of NSPE membership found in the states covered.

Younger engineers made relatively greater salary gains during the war than their older colleagues, according to Andrew Frazer, author of "The Engineering Profession in Transition," a survey which will be released in the near future.

The younger men's salaries rose from a median of $127 a month in 1939 to $232 in 1946 while median monthly salaries of engineers with from 35 to 39 years of experience rose only from $550 to $629.

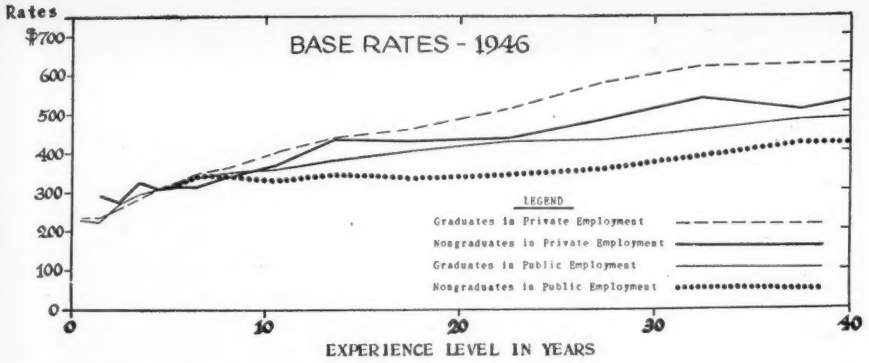
In 1939 the experienced engineer was paid 4½ times the salary of the younger man while in 1946, he was paid only 2¾ times the inexperienced engineers wage, according to the survey.

Men with 6 years experience received a median monthly salary of $343 or 60 percent more than during 1939, while men with from 12 to 14 years of experience received a median of $385 or 33 percent more than in 1939.

There is little difference between the earnings of the graduate and the non-graduate engineer during the first six years of experience, according to the report. After the sixth year is passed a sharp differential begins to develop. At the nine to eleven years experience level in 1946, engineers with Bachelors degrees reported median earnings of $389 a month whereas engineers with incomplete college courses or no college training at all reported $363 and $374 a month respectively. In contrast, Masters earned $409 while Doctors reported earning as much as $466 a month. At higher experience levels, the balance in favor of graduate engineers becomes pronounced.

Significant Differences

Really significant differences in engineers' earnings begin to appear only beyond the 8 years' experience span (i.e., 31 years of age). The extent of these differences, as might be expected, depends largely on the general field of employment of the individual, educational qualifications, and occupational assignment. For example, in 1946, median base monthly salary rates ranged from $224 to $256 a month among 10 groups of newcomers to the profession, 6 groups engaged as employees in private and 4 in public engineering. By contrast, among the six private engineering groups the range in median rates earned by engineers with from 35 to 39 years' experience span was from $513 a month for Civil engineers to $825 a month for Chemical engineers. Second in ranking order came Mining - Metallurgical engineers with $693 a month, followed by $650 a month for men in "other engineering fields," Electrical engineers with $604 a month, and $587 a month in the case of Mechanical-Industrial engineers. This steady progression in earning capacity with advancing years of experience also is characterized by a persistent and substantial spread in earnings at every experience level. This spread becomes particularly accentuated in the



Monthly salary rates of graduate and non-graduate engineers in private and public employment in 1946 related to experience levels.

upper 10 and 25 percent earnings groups.

The composition of the profession in 1946 by general field of employment showed nearly 73 percent about equally divided among Civil, Electrical, and Mechanical-Industrial engineers. There were 10 percent Chemical engineers, 7 percent Mining-Metallurgical, 6 percent in other engineering fields, and the remaining 4 percent were engaged in non-engineering work. Except for civil engineers, whose work was divided approximately equally between public and private engineering, those in the other 6 fields were overwhelmingly dependent upon private engineering for their employment. Nearly 60 percent of the country's professional engineers in 1946 were in the manufacturing and construction industries.

Occupational Fields

Among the 29 occupational statuses reported for 1946, nearly 30 percent of all engineers were engaged in technical administration-management. Design, development, and applied research attracted 15, 7, and 5 percent, respectively; supervisory construction, college or university teaching, private firm consulting, and sales each included from 4 percent to 5 percent. Among the remaining 21 statuses, the percentages ranged from less than 1 percent to 4 percent.

When related to each of the 29 occupational statuses, the median monthly salary rates among the newcomers to the profession in 1946 ranged only from $206 to $248. At the 6 years' experience mark, the range had increased from $280 to $378 a month. But at the 12 to 14 years' experience level, while engineers engaged in routine work, such as drafting, earned $310 a month in 1946, men engaged in non-technical administration - management earned as much as $555 a month.

The relationships found to exist between earned annual incomes reported for 1939 and 1943 only, and monthly salary rates in these same years, make it clear that the opportunity to earn substantially more than base salaries is confined to a small segment of the profession.

Earning Pattern

An earnings differential pattern that persisted to the end of the active experience cycle of professional engineers is disclosed by the 1946 information. This begins at the 15 to 19 years' experience mark and indicates that, at the median earnings point, Civil engineers generally receive the lowest remuneration, not only in private engineering, but also in non-federal Government employment in public engineering. Furthermore, the earnings of engineers in private engineering employment exceed by far those reported for public engineering, with private Chemical engineer employees consistently reporting the highest remuneration at all experience levels.

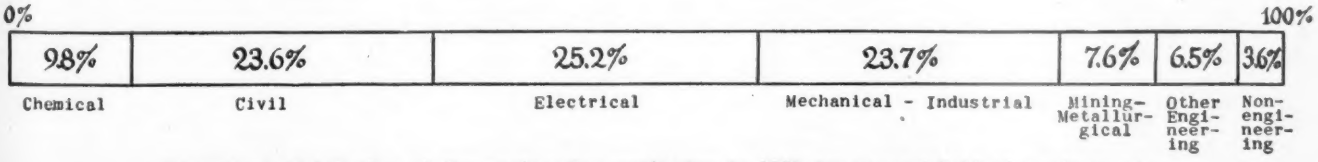
While the median monthly salary rate for newcomers in the civil engineering field is the highest of all, it is the lowest at the 40-year experience level. The median rates of Civil engineers steadily increased from $243 for newcomers to $513 for men with 35 to 39 years of experience while engineers in "other engineering fields" increased from $224 to $650 a month. The corresponding range for Chemical engineers was from $256 to as high as $825. Between the two extremes came Mining-Metallurgical engineers with median earnings that increased at the same experience levels from $236 to $693 a month, and below the "other engineering" group, but above the Civil engineers, were the Electrical engineers, whose reported median earnings increased from $237 for newcomers to $604 at the 35-39 years experience level, and the Mechanical-Industrial engineers who had a corresponding experience span increase from $225 to $587 a month.

Educational Variations

Perusal of employee engineers earnings indicates that they must be modified when related to educational qualifications. For example, the median earnings of the graduate group in 1946 increased from $232 a month to $346 a month over the experience spans 1 to 6 years, whereas the median earnings of the comparable group of non-graduate engineers increased from $295 to $317 a month. At the 7 to 8 years' experience mark, non - graduate private employees earned a median rate of as much as $365 a month. On the other hand, in public engineering, the earnings differential in favor of graduates does not assume statistical importance until the 9 to 11 years' level is reached.

Military Service

As to World War II, the survey points up the fact that approximately 12 percent of all professional engineers in the country served in the Armed Forces. A break down of this figure indicates that the war effort required mining engineers and chemical engineers generally to remain in civilian status or, if in the Armed Services, to follow pursuits outside their professional fields. More Civil engineers served in their field in the Armed Services than any other group. The breakdown of professional engineers in the Services in World War II is: Civil, 29 percent; Mechanical-Industrial, 15 percent; Electrical, 14.7 percent; Chemical, 1.8 percent; Mining, 1.0 percent; other engineering, 14.2 percent; and non-engineering, 24.3 percent.



Percentage distribution of the engineering profession in 1946, by general field of employment.

CIVIC RESPONSIBILITIES OF ENGINEERS

The engineer, by virtue of his professional standing, has important civic responsibilities, beyond those of the ordinary citizen. For example:

1. Engineering has transformed our ways of living, providing modern conveniences, mechanizing industry, and annihilating distance. These changes have required that vast numbers of people perform highly specialized tasks, making their livelihoods depend on the continued smooth working of both industry and government. Furthermore, with the advance in civilized living, any interruption of public service by wars, depressions, or other disorders, produces a vastly greater human distress.

Public Benefit

Therefore, the engineer has an obligation to go beyond his specialized tasks, and do whatever he can to have the best use made of technical knowledge, for the public benefit. The public recognizes the engineer as the agent of economic changes, and looks to him for a remedy whenever technical knowledge is misused, or technical services fail to function.

2. The engineer's training teaches honesty, since he learns that nature cannot be deceived. Also, his experience should develop a co-operative spirit, since engineering projects require that many specialists work in harmony. Thus, the engineer should be thrice fitted to be an instrument of public service, by his technical skill, his adherence to facts, and his experience in organized teamwork.

Professional Ethics

Professional ethics require that these special abilities be applied for the benefit of the community in which the engineer lives, for the principle of the income tax, whereby the rich give more to the public revenue than the poor, is generally accepted. The same principle suggests that the man with special knowledge or ability has greater civic responsibilities than others.

3. The continuing benefits that will arise from further technical progress, in improving the standard of living, conservation of natural resources, and promoting good will at home and abroad, are dependent on better public understanding of technical problems.

The engineer, therefore, has a responsibility for improving technical education and for aiding the public to understand technical matters of importance to the community.

Public Relations

The civic actions of engineers may, among other things, consist in:

1. Suggesting that a technical project be considered by the proper authorities.

2. Studying or expounding reports on a project to aid in broadening public understanding of its technical aspects.

3. Recommending individuals qualified for specific appointments; or the employment of competent engineering firms to undertake specific tasks.

4. Educational programs.

Naturally, such recommendations have more value if they express the considered thought of a group, or of a selected expert, rather than the views of a self-appointed critic. An individual may act in a small town, however, with the same effect as a committee in a city, or a section of a national engineering society in a greater area. In any case, the final action is taken by an individual, who is responsible for its technical soundness.

The simplest way to be useful in public affairs is to co-operate with the local planning authorities. If there is no city, county, or regional planning commission in existence, an engineer properly may recommend to the public officials that such a commission exists but is inactive, it is appropriate to recommend some change in the existing law, or the appointment of additional qualified members, that will assist the commission to function effectively.

Planning Suggestions

It is important also that local industry and business have active planning bodies. An engineering society properly may make recommendations to the officials of such groups as the chamber of commerce with even greater force than to public authorities.

When a capable planning commission exists, the chairman may be invited to present to the engineers a résumé of their projects in hand or objectives in view, and the engineers in turn may suggest additional projects for study.

When a project is proposed, individual engineers or committees may study the subject and give the planning commission their suggestions in regard to it, or the employment of qualified engineers to make formal recommendations may be suggested.

When a project is finally decided on by the commission, well-informed engineers may be helpful by addressing civic groups on the technical aspects of the proposal, or otherwise aiding the public to appreciate the questions at issue.

The legal, financial, and political aspects of any public question are often more important than the technical aspects, or harder to decide. The purely technical engineer cannot speak with authority in such matters. To be helpful, he must analyze and present facts, not advocate. His role is that of the expert witness. There are, however, a few engineers with sufficient judgment and breadth of experience to make over-all decisions, and these may be brought in for counsel when the need arises.

To be sure, the engineer is also a citizen, and so has a right to express his opinion on any public matter, but his preference counts no more than that of any other voter. If he allows his personal bias or his self-interest to enter into his factual reports, his testimony is discredited.

Individual Responsibility

The practice of professional engineering, which includes all engineering services to the public, is restricted in most states to registered engineers, who have met the requirements of state law. Also, no engineer properly can make a report on which official action is to be taken without accepting full responsibility as an individual.

One principle of success in public relations, therefore, is that any factual reports on public affairs made under the auspices of an engineering society be the responsibility of individual engineers, rather than of the

A report prepared by a joint subcommittee on civic affairs of the AIEE technical program and Sections committees. The subcommittee was formed by joint action of the technical program and Sections committees in April 1944, and was discharged after completing this assignment in December 1944.—Reprinted from ELECTRICAL ENGINEERING.

society as a whole. The group may suggest the project, and aid in finding a qualified engineer who will undertake the work. It is his responsibility to perform it in strict accordance with the engineer's code of ethics. The report itself should stand or fall on its own merit. The society, however, may support the conclusions by publishing endorsements of qualified technical committees or by formal organizational approval after due consideration.

In expressing their opinions on any subject, the officers of a national-engineering-society section, or committee, should speak as individuals delegated by their associates to give their views. They should not state or imply that the full membership of their organization supports these views, because it is impossible for the entire membership to assimilate any one technical subject, even if they were qualified to do so.

The Engineering Method

On the wall of the library in the Engineering Societies Building in New York, N. Y., is this definition: "ENGINEERING: The art of organizing men, and of directing and controlling the forces and materials of nature for the benefit of the human race."

Most engineers, while technically expert in a particular field, are not skilled in the art of organizing men, nor can they foretell any better what actions will most benefit people in years to come.

The engineer, however, has a particular virtue besides his technical skill, and that is his training in the engineering method. This method consists in experimenting, observing, and keeping an open mind, so that every proposal will be thoroughly tested before acceptance. Rather than accepting established methods or arbitrary statements, the engineer devises tests to check them.

In the field of human relations, this engineering method requires the democratic spirit of seeking advice from whoever can give it, and continually modifying ideas in the light of experience.

Perhaps the greatest contribution engineers can make in civic affairs is to apply the engineering method of analysis, substituting facts for opinions, and gaining decisions by tests rather than debate. The engineer should seek to impart this method to others, so that they may become more self-reliant, rather than to attempt himself to solve problems beyond his experience. In this way, the engineer will still be "sticking to his last," even though he enters the broad field of civic affairs.

Cooperative Activities

It is evident from this review that close co-operation between the many types of engineering specialists and the public authorities is desirable in these civic activities. Engineers are specialists, so that only by working co-operatively can they cover the wide range of technical problems that affect the public welfare.

Civic responsibilities are shared in some degree by all men of professional standing. The medical and legal professions have long recognized this, and by organizing co-operatively in county associations bave been able to perform creditably many civic tasks. Public officials habitually look to these associations for guidance in the fields of public health and law. Similarly, business men have organized chambers of commerce for co-operative civic actions. Following this trend also, the National Society of Professional Engineers has gained wide recognition as a leader in the organization of engineering talent for public service.

It is, therefore, logical for the engineers resident in any community to form committees, or join forces with other groups to perform these civic duties. How engineers should organize co-operatively in a given community has been discussed on numerous occasions, and trials have been made of many different procedures. This experience was reviewed at an AIEE conference in St. Louis, Mo., in October 1941, and again in New York, N. Y., in January 1942.

Cooperation in Practice

The general opinion at these conferences, and in discussion elsewhere, has been that co-operation may well be organized through the formation of a local engineering council, or club, or society, composed of representatives of the local chapters of the national engineering societies and other local technical organizations. In this way, the experience of the existing national organizations will be utilized, and the participation of all engineers in the community will be secured.

Based on the reports presented by representatives of active engineering councils of this type and on the discussions at the conferences just mentioned, specific recommendations in regard to the organization, functioning, and activities of a local engineering council were presented by F. A. Cowan, as recorded in *Electrical Engineering* for March 1942, pages 148-9.

In conclusion, engineering results are achieved first by specialized knowledge, and second by organized co-operation. The engineer gains some specialized knowledge in college, and extends it through his daily work, but the organizing skill required for effective co-operation in civic affairs is only learned through years of experience.

It is hoped that the suggestions in this report will inspire engineers to give thought to this important subject, and that they will aid them to be more useful in public affairs.

EJC Group Named To Advise State

The Engineers Joint Council, acting on a request of the State Department, has established a five-man advisory committee with a two-fold purpose: to serve as a consultative and advisory group to the State Department as and when requested; and in a similar way to serve the Engineers Joint Council representative on the U. S. National Commission on UNESCO, who is shortly to be named.

"Consultative Committee"

The newly authorized group is called a "Consultative Committee to the Committee on International Relations of EJC." It is composed of one member of each of the constituent societies of EJC, as follows:

E. M. Hastings, President of the American Society of Civil Engineers.

Clyde Williams, President of the American Institute of Mining and Metallurgical Engineers.

D. Robert Yarnall, Past President of The American Society of Mechanical Engineers.

W. E. Wickenden, Past President of the American Institute of Electrical Engineers.

J. G. Vail, Past President of the American Institute of Chemical Engineers.

Membership Meeting

The Central Area NSPE Membership Committee held a meeting on August 2, at the University Club in Chicago. State Society membership committee chairmen from the eight states in the central area were invited to attend.

ENGINEERS ARE *Also* CITIZENS

By R. M. GATES

President, Air Preheater Corporation, New York, N.Y.
Past-President A.S.M.E.

IT is highly appropriate that a power conference should consider the problem of the public responsibilities of engineers. Scientists and engineers have progressively harnesed Nature to provide mankind with tremendous power. Though terrifying in its destructive uses, this power in its constructive uses, actually and potentially, is an immeasurable contribution to the advancement of human welfare. Even the pressure of war has speeded technical progress applicable to the arts of peace.

But the creators and developers of our modern technology have not given due attention to the increased responsibilities which the possession of such power imposes on citizenship in a high-powered society. As has been wisely said, we have put high voltage into old wiring. Human relations have not been adjusted to the new technology. Communities, states, and nations cannot "carry the load." The fuses have been blowing out all along the line.

Gift of Vision

The achievements of scientists and engineers, and of businessmen using their services, have made it clearly possible to lift a great portion of the drudgery of the world off the shoulders and muscles of men. They are placing it upon the oil wells, the waterfalls, and the dynamos, upon countless machines so powered, and upon technical processes requiring a minimum of toil. They have given modern men a vision of plenty that may be peacefully shared, instead of scarcity that breeds conflict. But how much less of intelligent effort has been expended, how much less of achievement has been recorded, in the organization and adaptation of human nature and human institutions, to use these resources for the benefit of mankind and to realize this prospect of plenty and peace! Has not human ingenuity faltered at this threshold of opportunity?

Presented at the General Session, Midwest Power Conference, Chicago, Ill., April 2, 1947, of The American Society of Mechanical Engineers. Reprinted from MECHANICAL ENGINEERING.

We live in an age of specialists. Specialization has been a major factor of our material and social progress. The tools men used were once the work of their own hands. A modern machine, or even the simplest tool, is now the product of many workers. No one of them contributes more than a small part of the labor required, and usually none of the power and none of the old-time craftsmanship. The jack-of-all-trades has nearly disappeared from industrialized America. The scientist, generally, cannot be the master of more than a small area within one science. The versatility of a Leonardo, a Bacon, a Galileo, or a Newton does not fit into the current scientific scene. Even Edison limited himself to a few fields of exploration. Engineering, like other professions, has been divided into many specialties. Even though the dividing lines are often blurred and crossed, the tendency to specialization increases with our growing factual knowledge. All this specialization has its advantages but also its dangers. It makes for occupational isolationism.

Changed Way of Life

No occupation can successfully isolate itself from concerns common to all. We are all sharers in responsibility for government. In a government of the people by and for themselves, in our form of democracy, the active participation of every economic group, including every professional group, is needed. The rules of society within which all the people carry on their several occupations are matters of politics; so are the many services which the people wish their government to render. The sphere of government in which the politician is a specialist has expanded with the growing complexity and interdependence of our economic and social life. This is true of government at every level—local, state, national. We all share in paying a constantly heavier toll for inefficient and short-sighted management of these expanding public interests. Nor is it merely a toll in taxes; it is also a toll in national strength and security.

The new power, the new materials, the new processes, which engineers have applied to industry have wrought a revolution in our ways of life and in our human relations; and the revolution has obviously only begun, for no moratorium in science has been declared. This power age sees new aggregations of human power also. The increasing power of government is largely an outgrowth of the increasing power of aggregations of capital and labor; of nation-wide and even world-wide organizations of industry, trades, agriculture, and other occupational groups. The people as members of their respective groups make new demands on government for protection, for aid, for privileges, or to be let alone, while as citizens they insist that government keep the upper hand over all groups. Internal conflict at times undermines our national unity, strength, and prosperity. Thus politics has become increasingly everybody's business.

So, too, the new mechanical power which scientists and engineers have unleashed has brought the nations of the world closer together into a neighborhood. We must call it a neighborhood since the nations are no longer far separated by time or distance; also since they have become interdependent, since none may suffer or prosper without axecting others, and since they are exposed together to contagions — economic, political, and what not. Their relations in some respects, it is true, may not be in all cases what we call neighborly—but we do not always have neighborly feeling among neighbors in the same community.

Forgotten or Forgetting Citizens?

Our relations with other nations are matters of politics as well as economics. These two aspects cannot be divorced. Have all groups among us raised their sights to this world situation, not only as members of one national household but also as dwellers in a larger neighborhood?

Are we engineers as a group isolationists in respect to the responsibilities of citizenship, isolating ourselves from the politics of our local communities, our states, our nations, our world? Have we taken up the challenge of new mechanical power and new organizational power to human relations?

In public service of course countless engineers are professionally and gainfully employed. They plan and build the highways and subways, the bridges and dams, the water supply

and sewage-disposal systems, the canals and port facilities, whatever undertakings of town, city, county, state, and federal governments require engineering techniques. The Panama Canal the Tennessee Valley, and Columbia River projects, the Chicago Sanitary District, and the New York and Los Angeles water systems are outstanding examples of their professional public service. Every state, every city, almost every town employs engineers for planning, construction, and maintenance of essential utilities. City managers are usually engineers.

In war the service of engineers has become indispensable, both in the fields of military operations and in the supporting areas at home. In the recent war, thousands were enlisted in the uniformed military services; others as civilians in various war activities both at home and abroad. The presidents of several of the great engineering societies formed a National Engineers Committee which served the State Department. Its report on disarmament of Germany was so well received that it was asked to prepare a similar report on Japan. It also assisted in the selection of civilian experts to aid the occupation forces in Germany. The service of the Engineers Joint Council, in an advisory capacity, was continuously available to the Government.

Work of Engineers

The amazingly rapid improvements in aircraft and seacraft and their operating and fighting equipment, the vitally important provision of radar and other finding devices, the crowning development of the atomic bomb —these were largely the work of engineers. Much of the story of these and other contributions of engineers to victory is well known; far more, no doubt, remains to be told. To a greater extent than any other war, this was a war of engineers.

It is not engineers employed in public service as engineers, however, but engineers participating in public life as citizens, who should be the object of our concern.

If we look over the list of members of Congress, of state governors, of members of state legislatures, we find few engineers. I suspect this is true of mayors also. A year or two ago, Morris Cooke pointed out that among more than 40 organizations selected to advise and aid our delegates to the United Nations Conference at San Francisco "scientific and engineering groups were totally absent;" yet the groups chosen comprised religious, educational, legal, agricultural, racial, business, and social organizations, as, for example, Rotary, Kiwanis, and Lions Clubs. And among 400 individual consultants and advisers officially chosen from many occupations, there was only one engineer, also only one scientist. Our profession is also meagerly represented on the organizations later set up by the United Nations. Moreover, among hundreds of directors of organizations of local and national citizens' groups seeking to promote the cause of peace, we find almost no engineers. Yet peace, with the things that make for peace, is the world's most important problem, and should be America's most absorbing concern.

Some say that engineers do not like politics; others, that we are too busy in the practice of our profession. But lawyers, educators, bankers, industrialists, labor leaders, even the clergy, have their occupational interests, and yet do not regard them as watertight compartments in the "Ship of State." Inactivity in regard to civic responsibility means consent to policies and practices that we may disapprove or could help to improve; policies and practices which affect our professions or businesses as well as the whole life of our nation. If we engineers, as a profession, regard ourselves as unduly overlooked in political affairs of the highest national concern, perhaps it is because we ourselves have been overlooking some responsibilities. Perhaps our profession, in this regard, is not so much forgotten as forgetting.

Predominance of Lawyers in Public Life

Let us note, for purpose of comparison, the participation of the legal profession in our political life.

Here the lawyer plays by far the most prominent part. Of the 32 presidents of the United States, 23 have been lawyers—though most of them practiced politics more than law. In Congress, in state and local governments, lawyers are predominant. In the Senate of the last Congress, for example, there were 70 lawyers and two engineers; in the House of Representatives, 299 lawyers, and one or two engineers. In the present Congress, I am told, the total is four engineers.

Tradition of course is an important factor in this situation. Engineering was not generally recognized as a profession when our nation was born —certainly not in the sense that the law was recognized. Most of the educated men of the community were likely to be lawyers, clergymen, or teachers. The clergy could preach and the teachers could teach government, but the lawyers practiced it.

The profession of law by its nature was closely tied up with government. Law courts are an arm of government. For making, interpreting, applying, enforcing, and evading laws, people naturally turned to the profession in which special training and experience are found for any of those purposes.

Furthermore, lawyers are supposed to develop special skill in presenting either side of an issue persuasively. They can so analyze an issue from all sides that they can clarify or obscure it, highlight the strength or weakness of either side, or make the worse appear the better reason. This skill is useful to them in gaining or retaining public office; useful also to the political parties to which they attach themselves; and often useful to the public. The nation and its communities have a continuing need of able lawyers who will use in political life their talents and training and experience, not mainly for self-advancement or party advantages, but for public service.

Engineering Approach in Public Life

The United States is now an industrial nation whose main economic, social, and political problems have arisen because of the achievements of science and engineering. As the creative agents of technical progress, engineers have accumulated intimate knowledge of the materials and forces that can be used to serve human needs. They have had to maintain a realism which keeps their feet on solid ground, while at the same time exerting alert imagination to discover unattained possibilities. Knowledge, realism, and some imagination make up the equipment required for engineering achievement. Can such disciplined wisdom be applied to the nontechnical problems of human relations that confront us—to the consequences of engineering achievements as witnessed in our economic, social, and political life?

These problems are different from those with which engineers normally have had to wrestle. In the study and application of inanimate materials and forces, one's self may be kept pretty much on the outside of the circle encompassing any given personal prejudices, are largely excluded. But it is well nigh impossible problem. The perspective is one from which personal likes and dislikes, and

so to detach one's self when handling human relations, or problems in which human nature is a significant factor. One's self in this area is inside the circle. Emotional reactions, conscious or unconscious preconceptions, even a philosophy of life, color judgments. A scientific objective viewpoint cannot be maintained. Therefore it is concluded the engineering type of mind is not trained for operation in such a field.

We may find some substance in this argument without accepting its conclusion. Lawyers in politics, with long training and experience in the study and adjustment of human relations, in the science and art of government, seem to differ widely both in the viewpoints from which they look at government policies and in the opinions they form about them. A quite different type of approach is often needed.

For instance, in New York, after the first world war, it required the factual grounding and the realistic imagination of Al Smith to effect an extensive reorganization of the state government. He was not a lawyer, nor a businessman, nor an academic political scientist. Though not an engineer by training, he used engineering tools — knowledge, realism, and imagination, in his attack on the problems of government. The outstanding services of Robert E. Doherty and Edward R. Weidlein, as heads of the Allegheny Conference on Community Development, were recounted in a recent issue of *Fortune*. Pittsburgh is on the way to being made over under their leadership. The program is "to get the facts, then do something about them, step by step, with a unified plan for the region as a whole." It set about to work through existing agencies, recommending or commissioning them to carry out specific projects. If an agency dawdled, it was prepared to take over the work and see that it "got done." I have already referred to some of the great municipal enterprises of Chicago, under the administration of its engineer-mayor.

During World War II, we had numerous examples, provided by members of our profession, of the handling of problems involving mainly human relations and therefore lying outside the conventional fields of engineering. The services of Charles E. Wilson of General Electric, William L. Batt, Howard Coonley, Ralph Flanders, and others could be cited.

Knowledge of the materials and processes employed in the manifold activities of industry has a real value in appraisal of the expanding problems of public service. It has value in formulation of public policies involving regulation of private enterprise and cooperation with it for the common welfare. Those who are trained, and disciplined by experience, to know the background and elements of a problem before they attempt to solve it are least likely to let projudicial and wishful thinking lead them into snap judgments and half-formed conclusions.

Realism is a habit of mind not confined to any profession or occupation, but necessarily acquired in engineering experience. Not only what is the background of a problem but also what are the means practically available and the existing conditions for its solution — these are questions which the engineer is accustomed to ask and which he diligently seeks to answer. Engineers speak a common language, and have a common regard for fundamental truth. This realism is no less important in municipal, state, national, and international problems than in those of private industry.

Knowledge, Realism, and Imagination

Imagination of course is the wellspring of progress. Few, if any, other occupations make such demands on creative imagination, or help so much to develop it, as does engineering. To conceive something new, and then to plan and realize it, is forever the engineer's task. His creative imagination should be used not only in the planning and construction of public works, but also in sharing responsibility for antecedent and consequent policies. The training which makes him adaptable and resourceful in operational situations is useful in many types of governmental problems. I would not depreciate the service of politicians by profession who use their gift of leadership for the common welfare. But large responsibilities are too often entrusted to politicians whose creative imagination may be limited to building personal or party political fences.

It becomes increasingly clear, as the influence of government is expanded over a wider range of human relations and activities, that we must outgrow this conception of politics. Wherever scientific knowledge, disciplined realism, and creative imagination may be found there is certainly ample opportunity to use them in our local communities, our states, our nation, and our world. Why should we not encourage the public to turn to our profession not only for the technology that makes possible a high standard of living for our people, but also for guidance in the great task of adjusting human relations to this technological progress?

Where Citizenship Begins

It may seem that I am urging engineers to give up their jobs and devote themselves to politics, or at least to neglect their chosen profession for competition in another field already overcrowded with willing workers. Of course that is not at all my purpose. It is, rather, to suggest that too few engineers, as compared with members of other professions, are actively interested in public affairs as citizens of their respective communities and of the nation; that the engineering approach is too little utilized in the solution of problems of common concern outside of the conventional engineering field; and that engineers need to rethink their responsibilities as citizens in a society confused and floundering in efforts to adjust itself to new powers and new possibilities. Every engineer should find some time to give to civic responsibilities, and this without neglect of his professional duties. Engineering will benefit by the inspiration that grows out of these wider contacts.

One could find many engineers who have engaged actively in the life and service of their communities along lines having little or no relation to their professional activities. They have advanced philanthropy, worked in welfare activities, served as trustees of civic organizations or institutions, and led civic movements. They have maintained contact with the political machinery of their communities, served on political committees, and taken active parts in local political life.

But by and large is not a definite detachment from the political structure of our society—the basic structure, in a sense—the more common practice among engineers? In this detachment from the nontechnical world may be found the reason for some lack of recognition, by public authorities and by the people at large, of the variety of services which the engineering profession can render and should be called upon to render in the solution of community problems.

Since community organization is at the base of the whole structure of government, it is here that the engineer may well first try his wings as an active citizen. Responsibilities taken at this level lead to larger responsibilities he may be well qualified to take and may find satisfaction in taking. Thus an unfortunate gap in communication between our profession and the broad field of public service, unfortunate for the national welfare, may be gradually bridged.

The Committee on Engineering Education, the Engineers' Civic Responsibilities Committee, and other committees of the Engineering Societies have been emphasizing this responsibility of engineers. They have recognized not only that engineering education must train prospective engineers as to their civic responsibilities but also that such education is futile if not followed up by active participation. The old adage that we learn by doing is no less applicable to the engineer as citizen than to the engineer as engineer. It is never too late to begin. Indeed the responsibility increases as acquaintance, connections, and standing increase opportunity.

Some Problems of National Citizenship

Among the current problems which occupy the political stage there are few if any which do not call for application of the engineering approach, as I have defined it, and for the participation of engineers in efforts to solve them. Without entering into details, I would mention some of these problems:

1. The American people are justly concerned about industrial relations — how the aggregations of power in industry can avoid internal conflicts that disrupt the life of the nation. We have already had strikes of such dimensions. Are engineers concerned? Of course they are vitally concerned. They range through industry from top executives to employees on weekly wages. Here is a job of engineering applied to human relations.

2. We seek efficiency and economy in government. What services of the Federal Government have outlived their usefulness? What services need to be expanded? What new services are required? How efficiently and economically are the various services rendered? These are not questions to be answered by snap judgments of the uninformed. Is this not a field in which the engineering approach is needed?

3. We find it difficult to strike a balance between freedom of enterprise and social control. What controls that seem necessary are practicable and expedient? Are present controls exercised efficiently? Engineers are in the midst of this problem.

4. How may our national resources be used most efficiently for the common welfare; in production and distribution equal to need, with adequate incentives to capital, management, and labor, with high productivity? What natural resources need to be carefully considered, and how? Engineers, if anybody, should be able to find the answers.

World Citizenship

We are face to face also with even graver international problems. They are related, of course, in one way or another, to the problems just mentioned. Let me call attention to a few, without more than the briefest comment:

1. Postwar relief and rehabilitation are economic, political and social problems, as well as engineering problems. As regards the countries devastated by war or drained of resources by war, emergency needs must be met on a practical as well as emotional basis, with a minimum of waste and a maximum of direction toward self-sufficiency.

2. Economic development is needed by various backward peoples. They vary in natural resources, in capacity for types of industry, in economic needs, in organization of society. Our aid, where it can be offered, will be effective only if intelligently adapted and long-term guidance is given.

3. Allocation of world resources is pressed upon our attention. The world's unappropriated resources cannot become a free-for-all grab bag if world peace is to be won. The allocation and use of these resources must be adjusted not by diplomats, legislators, and military men alone, but with the aid of the best knowledge and foresight that can be enlisted.

4. What use shall be made of new sources of energy? Developments in nuclear energy seem to open a new chapter in man's mastery of his environment, perhaps in the history of mankind. Engineers opened the chapter; they will write on every page. Whatever social control of this source of energy is necessary or feasible, engineers must be responsible participants. Those who knew how to develop new sources of power for war should know how to apply them to the uses of peace.

Active Citizenship

These are a few of the problems that call for a broader vision, a wider participation, a readjustment of functioning on the part of engineers as engineers, and engineers as citizens. Can we meet this challenge?

It has often been said of our profession that it has achieved increasing mastery of Nature. Somehow "mastery" has never seemed to me quite the right word. Man has not conquered Nature — even his own nature. He advances more by increased understanding of Nature than by increased conflict with it. Science humbly recognizes frontiers that it has not yet even reached in its ceaseless exploring, and seeks ever to learn more about Nature's materials, forces, and laws. Engineering, as applied science, aims to apply the findings of science to human needs, to use the resources of a bountiful Nature for human advancement. It works with Nature, in the main, not against it.

To meet human needs, to raise standards of living—that is the ultimate objective of engineering, whether in research, in processing, in designing, or in management. But fulfillment of that purpose requires many economic, social, political adjustments.

Leadership which guides aright the adjustments that must accompany technical progress must have a practical understanding of human nature and human relations. It should have a devotion to truth, not swerved by colorful half-truths or wishful thinking. It should keep a clear view of ultimate goals. Knowledge, realism, and imagination; the engineering approach is needed here where the work of inanimate nature leaves off and the forces of human nature take over. The engineer as citizen should wish to follow through, learn to follow through, and follow through. Active citizenship is the complement of successful engineering.

Yes, engineers can meet the challenge of twentieth-century citizenship individually and collectively. They have unleashed and are developing nuclear energy. Let us unleash and develop a civic energy that will entitle our profession to its proper place in the leadership of our communities, our nation, and our world.

Public Relations, Ethics Acted on by Board

(*Continued from Page* 10)

Assuming this to be an equitable basis for payment of fee, and the unanimous opinion is that the engineer's fee should reflect current costs, the question resolves itself into one of determining a fair basis for attaining and verifying the engineer's estimate. Three general methods are suggested by the survey for arriving at the "Engineer's Estimate" to be used as a basis for payment of the design and specification fee.

(a) The estimate as prepared by the designing engineer.

(b) A negotiated estimate based on the engineer's estimate and that of a reputable contractor.

(c) An estimate based on construction prices of a specified year adjusted to current costs by means of a specified building or construction cost index.

Using 1941 as the base year the opinions of the engineering firms responding to the committee's survey indicated current construction costs to be from 50 to 60 percent greater than those of 1941, and further, that costs of producing plans and specifications were likewise from 50 to 60 percent greater than in 1941. A review of the several "Cost Indices" published in the annual Construction Costs issue of the Engineering News-Record indicates a range of increase for the year 1946 over the year 1941 from 24 to 56 percent, averaging 35 percent. Thus far in the year 1947 the indices indicate an even greater increase. For example, the Engineering News-Record Building Cost Index while indicating an increase of 24 percent for 1946 over 1941, currently shows an increase of 41 percent for the year 1947 over 1941.

During a period of great fluctuation in cost it is difficult to equitably determine charges for engineering fees on projects which are not submitted for bids. The intent of a Schedule of Fees as established by various engineering groups, however, is to equitably reimburse the engineer for services rendered. In the problem under consideration this intent should remain the basic principle for determining the amount of the fee for any particular project. The National Society and the several State Societies should stand ready to aid any or all of its members whenever an apparent hardship is imposed and to intercede in their behalf when the occasion demands.

Your committee realizes only too well that concrete proposals at this time are virtually impossible, but wishes to call to the attention of State "Salary and Fees" Committees the existence of this problem, and recommends that it be studied in the several State societies in the hope that a solution may be forthcoming, if not in time to meet the current problem, at least we would be better prepared for any future problems of a similar nature.

Respectfully submitted,

Practice and Ethics Committee

The Constitution and By-Laws Committee submitted a report on a resolution which it had considered to require "That there shall be a common constitution for all State Chapters, allowing Chapters to establish their By-Laws only."

In its report on this resolution, the Committee said:

"Your Committee believes that the adoption of such resolution would be to depart from the democratic principles upon which the National Society of Professional Engineers was founded. The tenets of our Society recognize that the authority and policies of our organization start with the individual engineer who functions through his Chapter, to the State Society, and thence to the National level. In keeping with the Constitution of the State Society, under which Chapters are organized, uniformity is essential, but this may be obtained through recommendation, rather than by direction, of the National Society. It is a matter which properly belongs within the province of the State itself. For these reasons, it was recommended that this resolution be rejected."

Letters from Readers

Neither THE AMERICAN ENGINEER *nor the National Society of Professional Engineers necessarily agrees with the comments, views, and opinions which are expressed by the writers whose letters are reproduced on this page. However, it is the magazine's policy to publish letters which it believes worth while, whether or not they agree with our opinions.*

The Editor
THE AMERICAN ENGINEER:

Recent press reports state that the War Department will shortly cancel most, if not all, of the contracts now in effect with colleges, universities and other scientific organizations for research in science. The wicked scientists are solemnly accused of frittering away the people's money in investigations of matters "of academic interest only."

Shades of immortal Ben Franklin and Leonhard Euler! Where would we be now if the War Department could have had "broad authority" to plan and direct research 175 years ago? How the bureaucratic brass would have loved to put those academic dreamers in their proper place! What the Army of those days needed was water-proof cartridges and unbreakable flints for their muskets! Who cared whether lightning could be made to charge a leyden jar or not? What did it matter what the elastic properties of a slender column might be? Those were matters "of academic interest only!" None but a few musty minded dreamers would give a second thought to such impractical nonsense!

To be sure, times have changed. The War Department now uses such impractical gadgets as electric motors, radar, internal combustion engines, and a hundred others that have been dreamed up by academic followers of Franklin and Euler, but the bureaucratic mind is still the same as in the days of Frederick the Great. Today they propose the centralizing of research in the War Department and, lest the impractical academicians might disturb the "planned progress" of military research by dreaming up some more gadgets, all colleges and universities are to be made dependent

for their very existance upon their complete subservience to the slightest whim of the bureaucrat mind. The Universal (military) Training Plan takes care of that very neatly. Every boy (except 4F's) will be placed in the Army before his mind has been exposed to contamination by contact with academic influences. After a thorough indoctrination in military thinking a few chosen individuals (selected by the Army) are to be sent to colleges (designated by the Army) where they will be served a course of instruction (approved by the Army) by faculties (paid by the Army) who can be depended upon to instill a proper regard for Standard Operational Procedure. Any college not approved by the War Department may continue to dispense education to girls and 4F's!

And when the swarming millions of Asiatics descend upon us like locusts, our sons and grandsons will march to meet them with the *same* weapons that we used in W.W. II. And when our 8 millions are massacred by the 30 million assorted Mongols, Kirgiz, Turkoms and Slavs it will all be the fault of the academicans who sabotaged the Army plan by not inventing the particular devices specified by the War Department.

HAROLD H. MUNGER,
Assistant Professor, Dept. of Applied Mechanics, Kansas State College. Member, Education Committee, N.S.P.E.

George C. Marshall Honored by ASME

Secretary of State George C. Marshall has been elected to honorary membership in The American Society of Mechanical Engineers, Clarence E. Davies, Secretary of the society, announced recently.

In a letter to Eugene W. O'Brien, of Atlanta, Ga., President of the engineering society, Secretary Marshall formally accepted the honor and said that if his other commitments allow, he will attend the annual dinner, to be given on the evening of December 3 in Atlantic City, to accept the award in person.

Henry Ford II, President of the Ford Motor Co., Detroit, will be the speaker at the dinner. His subject has tentatively been announced as: "Greater Production for Peace." The dinner will feature the 68th Annual Meeting of the Society, December 1-5 in Atlantic City, the first one to be held outside of New York.

Rice Institute Adopts 5 yr. Plan

Rice Institute of Houston, Texas, has adopted the five year engineering course to begin next September.

The institute's new program calls for uniform courses during the first and second years for all students taking engineering.

All such students will be required to take two courses in chemistry: (1) introductory chemistry and qualitative analysis and (2) quantitative analysis. They will also be required to take "Foundations of Western Civilization," or American history, English composition, an English elective, and German during their first two years of study. During the second term of the second year of study, aptitude tests will be given to assist students in choosing specialized courses for their third year.

An AB degree will be given to engineering students finishing four years of study. On completion of the fifth years a BS degree in engineering will be given.

Under the new system, engineering students will be required to take a minimum of two and one-half years of English instead of the present one and one-half years, two years of a foreign language instead of the present one year, a year of history, not now required, and one year of one of the following, none of which is at present required: philosophy, psychology, sociology or additional English.

ASME Officials Active in NSPE

Two members of NSPE are among the new officers of ASME who will be formally elected next fall, according to information received from the mechanical group.

They are: (1) Frank M. Gunby who has been nominated as vice-president for Region 1 and (2) A. L. Penniman who has been named director-at-large.

Mr. Gunby is an associate of Charles T. Main, Inc., Boston, while Mr. Penniham is superintendant of operations, Consolidated Gas, Electric Light and Power Company of Baltimore. Mr. Penniman has been nominated for a four year term. Regional vice-presidents are elected for two years.

E. G. Bailey of New York, vice-president of the Babcock and Wilcox Company, has been selected as the next president of ASME. He will succeed Eugene W. O'Brien of Atlanta.

Publication Committee Activity Notes

Significant changes in appearance, contents, and layout of The AMERICAN ENGINEER have evoked considerable comment from NSPE members. Some excellent suggestions have been received which will be most helpful in improving the journal and which will help to minimize the time it will take for it to reach a front rank position in the field—a position to which it is justly entitled.

Reader Interest

Reader interest can be two-fold in meaning, depending upon the aspect from which it is viewed. Recent developments will make it possible to provide text that will be thought provoking as well as informative in character. But there is another form of reader interest that is being developed. Your comments on and criticisms of the magazine will materially help to formulate a style that can easily be the ultimate in achievement. It is not amiss to suggest that this is one of your own responsibilities not only as a member of NSPE but also as one who is part of a great service-performing profession. The volume and character of your comments is a measure of your reader interest.—CGK

The Anchor Packing Company

Pump Valves Asbestos Products
Mechanical Rubber Goods
Tauril Hydroil

100 SIXTH AVENUE
(Near Canal Street)
New York, N. Y.

Oklahoma Committee Aids Civic Improvement

The Oklahoma Society found at its January meeting that its state's sanitary laws left something to be desired. A special legislative committee was appointed to do something about this condition. Results? Highly satisfactory. Other state societies might follow suit by engaging in similar civic activities.

By WILLIAM RITZHAUPT

Chairman,
Sub-Legislative Committee, OSPE

Are all laws made by lawyers?

The answer is no. The Oklahoma Society of Professional Engineers at their state convention, January, 1947, appointed a special legislative committee to assist the Oklahoma State Bureau of Sanitary Engineering in correcting certain obsolete laws, and preparing new laws covering unsanitary conditions prevailing in the state with the avowed purpose of checking the spread of contagious diseases.

As a result of this action an augmented committee of more than forty registered engineers in the State of Oklahoma contributed their time and efforts in compiling the necessary information needed for the drafting of four bills to be presented to the legislature for their enactment.

The first bill prepared was to correct the state sanitary sewer law covering the legal procedure and engineering specifications by which all future sanitary sewers could be built in the State of Oklahoma inside the corporate limits of cities and towns. There existed an old law which had become almost inoperative due to adverse court decisions, and the looseness with which it originally was drawn. It governed the financing of such construction. The new law abolished the old sewer tax warrant procedure; and set up instead special assessment sewer bonds collectable at the time and on an equal basis with an advalorem tax. This in itself will reduce the cost of this type of construction within the corporate limits of a city as much as 35%.

The second law sets up the procedure for financing and constructing sanitary sewer systems and sewage disposal plants outside of corporate limits of cities and towns. In other words it is a county sewer law, which becomes operative after the proper authority has been vested by the county commissioners in a board of directors living within the sewer district. After this board is appointed it assumes all the rights, authority, and privileges of a governing body of a city in so far as the business of building, operating, and maintaining each individual sewer district is concerned.

The third law empowers the State Bureau of Sanitary Engineering of the State Health Department to control the location, design, recirculation, maintenance, and operation of swimming pools in the State of Oklahoma to which the public has access. In a measure the state had this authority. The new law makes it more effective by putting teeth in its enforcement.

The fourth law was considered by the engineers as a "must.". It empowers the State Bureau of Sanitary Engineering of the Health Department to purchase, own, equip, operate, and man, mobile health laboratories, which may be moved to the sites at which raw sewage and industrial wastes are contaminating the state waters. Trained technicians manning these laboratories are required by law to run the bacterial analysis, the B.O.D., D.O., and other necessary tests and certify the water to the Commissioner of Health. With this technical data in hand if pollution or contamination exists, the Commissioner of Health can back up his orders or demands that proper treatment be inaugurated or the continuing of this unsanitary condition be eliminated.

Many engineers became keenly interested in this legislative program, and as a result of their interest the Oklahoma Medical Association, the Municipal League, the Bar Association, bond attorneys, bonding companies, and bankers assisted in obtaining favorable consideration for this health program. As a result of this concerted effort inaugurated by the engineers all of these laws received almost unanimous vote by the House of Representatives and the Senate; and were signed by the Governor.

CEMENT GUN COMPANY
"GUNITE" CONTRACTORS
GENERAL OFFICES—ALLENTOWN, PENNA., U.S.A.

VIADUCT SAVED WITH "GUNITE"

The two views are of the nine-span Fifth Street Viaduct at Lynchburg, Va. This is one of four viaducts we repaired with "GUNITE" for that city last year.

This thirty-five-year-old viaduct had become dangerously weakened by disintegration of the concrete girders, floor beams and deck slab. The entire area of the underside of the deck, beams and girders was chipped, sandblasted and restored to original strength with reinforced "GUNITE." The bridge railing was likewise completely rehabilitated.

"GUNITE" restoration of old structures of this kind will result in a great many years of additional safe service.

Our bulletin E2300 describes many similar jobs and scores of other uses of "GUNITE." Write for your free copy.

MANUFACTURERS OF THE "CEMENT GUN"

Engineering Education and Economic Success

Students who are preparing to practice should be fully informed of the relation of engineering work to the economic success of enterprise, Walter H. Wheeler, chairman of the NSPE Educational Committee, told a recent meeting of the American Society for Engineering Education in Minneapolis.

Mr. Wheeler, a graduate of the University of Minnesota, said: "I soon found it necessary to supplement what I had learned here, with some knowledge of a number of other subjects which were not included in the curriculum and which one does not usually associate with a technical education. I have found that such knowledge is quite as important and quite as indispensible to success in my professional work as the technical knowledge. I acquired this extra curricular knowledge the hard way. It would have been very helpful to me if I had acquired at least some understanding of it along with my technical training, and especially of the economic relation of engineering to industry and national progress."

How Little I Knew

Speaking specifically of his practical experience which was acquired after his graduation, Mr. Wheeler said, I learned "how little I knew about a multitude of things; the workings of political bodies and labor unions, the law of contracts, psychology, philosophy, salesmanship, public speaking, economics, human relations and other subjects with which I had very little acquaintance."

In order to improve engineering education, Mr. Wheeler recommended adoption of the five year curriculum by engineering schools throughout the country. Under this curriculum, about 80 percent of the courses given to engineers would be technical and 20 percent non-technical such as those referred to by Mr. Wheeler as having been absent from his college courses.

This program has been recommended by the NSPE Educational Committee which in turn has recommended it to the deans of engineering colleges all over the nation.

Letter to Deans

In its letter to the deans, the NSPE Educational Committee also made the following statement, "We recommend that engineering degrees—that is degrees including the designation *'engineering'* or *'engineer'*—shall be given to only those students who have successfully completed at least five years of work in an integrated program of cultural, basic, and engineering studies at college level."

Speaking of replies to the Committee's letter of recommendation, Mr. Wheeler said that they were very encouraging but that there was one note running through the replies that was puzzling.

"You will note," he said, "that we recommended that, degrees including the designation 'engineering' or 'engineer'—shall be given only to those students who have successfully completed at least five years of work in an integrated program of cultural, basic, and engineering studies at college level.' We thought the meaning quite clear. Nevertheless, quite a number of the replies indicated that the writers interpreted this to mean that no degrees be given for less than the five year course. This was not the intention.

Other Degrees

"I believe that we are quite well aware that many men go to college and take engineering courses with no thought of practicing the profession, and that they do not wish to spend five years in college. Others take an engineering course to prepare themselves for careers as technicians. I am quite sure that no member of our Committee would suggest that you deny degrees to students who have completed three years, or two years, if you wish to give them. Our concern is that the student should not be given an engineering degree unless he has completed a course along the lines we have recommended. Give them a Bachelor of Science degree or any degree that you wish, provided that the word engineering is kept out of it. In other words, it is our feeling that when a man has received an engineering degree it should mean that he has received a broader education than that of a technician, that he is prepared to enter the profession and become a professional man after he has acquired the necessary amount of practical experience.

Learned Profession

"I believe that it is the intention of our society that our Committee continue its study of this matter and we hope that we may count on the cooperation of the educators. I am sure that our one thought and purpose is to contribute if we can toward the raising of the standards of engineering as a profession so that its members can become more useful citizens and take an active part as leaders in the world of affairs, and be recognized as members of a learned profession."

MUrray HILL 2-4971-4972

WIELANDT CONSTRUCTION CO.

Inc.

MASON CONTRACTORS

50 East 42nd Street New York City

ARCHITECTS!!

ENGINEERS!!

try

CLODER'S

FINE PAPERS

No. 53
An inexpensive tracing paper, yellowish color for rough sketches in pencil, crayon or charcoal. Used by architects and engineers throughout the country. Standard roll is 42" by 50 yards—your cost, only $2.25 a roll. We will cut this roll to any size you want at no extra cost.

No. 405
Dalton Bond — medium weight — the finest 100% rag bond tracing paper ever made.

No. 406
Same as No. 405 but a little heavier. Prices are the same for both weights.

No. 405 and 406	Rolls 36"	Rolls 42"
20 yds.	$2.45	$2.75
50 "	5.50	5.95

WRITE FOR SAMPLE

CLODER
"Your Supply Store"

177 Broadway, N. Y. 7, N. Y.
WO. 2-0453

AEROFIN
CORPORATION
Syracuse *New York*

Member State Societies N. S. P. E.

Officers and Directors

Arkansas

R. L. Parmelee, Pres., Box 588, Helena; Max Mehlburger, Nat. Dir., Pyramid Bldg., Little Rock; Joseph F. Mayne, Sec., Box 2261 Little Rock.

Connecticut

Clarence N. Wiley, Pres., Box 509, Milford; James D. Skinner, 127 Collingwood Ave., Bridgeport; L. Morton Reed, Sec., 42 Florence Ave., Devon.

District of Columbia

Herbert Manuccia, Pres. & Nat. Dir., 3900 Mt. Vernon Ave., Pres. Gardens, Alexandria, Va.; Charles H. Jennings, Sec., 3082 South Woodrow, Arlington, Va.

Georgia

Cherry L. Emerson, Pres., Georgia Tech, Atlanta; Wm. C. Cureton, Jr., Nat. Dir., Rt. 1, Rising Fawn; Charles E. Layton, Nat. Dir., City Hall, Thomasville; Ray L. Sweigert, Sec., Georgia Tech, Atlanta.

Illinois

Duncan M. Campbell, Pres., Dept. of Highways, 160 North LaSalle St., Chicago; W. A. Oliver, Nat. Dir., 201 Engineering Hall, Urbana; H. E. Babbitt, Sec., 204 Engr. Hall, Urbana.

Indiana

T. R. Jacobi, Pres., 5159 Carvel, Indianapolis 5; M. W. Cameron, Nat. Dir., R.R. 1, Box 105-A, New Augusta; J. B. Wilson, Ex. Sec., 10 West Ohio, Indianapolis 4.

Kansas

C. Y. Thomas, Pres., Box 604, Pittsburg; A. M. Meyers, Nat. Dir., K. C. Structural Steel Co., 21st & Met. St., Kansas City; E. E. Larson, Sec., Court House, Lawrence.

Maryland

Col. James A. Pratt, Pres., 310 Dixie Drive, Towson 4; Russell B. Allen, Nat. Dir., 4610 Hartwick Rd., College Park; Stewart W. Parker, Ex. Sec., 511 Murdock Rd., Baltimore 12; Dewitt Frank Swart, Sec., c/o Frank Schenuit Rubber Co., Woodbury, Baltimore.

Massachusetts

George E. Fox, Pres., Chapman Valve Mfg. Co., Indian Orchard; Wm. F. Ryan, Nat. Dir., c/o Stone & Webster Corp., 49 Federal St., Boston; Robert A. Spence, Sec., Harvard University, Lehman Hall, Cambridge 38.

Michigan

Stephen G. Szabo, Pres., General Motors Corp., Fisher Body Div., Detroit 2; Ivan N. Cuthbert, Nat. Dir., c/o Smith, Hinchman & Grylls, Inc., 800 Marquette Bldg., Detroit 26; Donald E. Trefey, Sec., 100 Farnsworth Ave., Detroit.

Minnesota

A. M. Kircher, Pres., 415 Van Brunt St., Mankato; S. L. Stolte, Nat. Dir., 1437 Marshall Ave., St. Paul, 4; Hibbert Hill, Nat. Dir., 4512 Wooddale Ave., Minneapolis; Richard R. Price, Ex. Sec., 1000 Guardian Bldg., St. Paul 1; Gordon Bodien, Sec., 1925 East 26th St., Minneapolis.

Missouri

C. G. Roush, Pres., 101 West 11th St., Kansas City; Bruce Williams, Nat. Dir., P.O. Box 264, Joplin; H. J. Bruegging, Sec., P. O. Box 365, Jefferson City.

Nevada

A. J. Shaver, Pres., 209 S. 3rd St., Las Vegas; J. A. Tiberti, Nat. Dir., Box 1662, Las Vegas; E. E. Keller, Sec., P. O. Box 882, Las Vegas.

New Jersey

Alonzo L. Jones, Pres., 6 Lawrence Ave., West Orange; C. George Krueger, Nat. Dir., 85 Van Reypen St., Jersey City 6; Joseph M. Cerreta, Nat. Dir., 163 W. Colfax Ave., Roselle Park; Daniel M. Kramer, Nat. Dir., 107 S. Gerard St., Woodbury; Frank C. Mirgain, Nat. Dir., 208 Lawrence Ave., Highland Park; Merton S. Adams, Sec., 9 Oakland St., Trenton 8.

New Mexico

G. Perry Steen, Pres., c/o Univ. of N.M., Albuquerque; W. C. Wagner, Nat. Dir., c/o Univ. of N.M., Albuquerque (Box 91); Walter K. Wagner, Sec., 1233 North Vassar, Albuquerque.

New York

Wm. H. Larkin, Pres., c/o B. F. Sturtevant Co., 420 Lexington Ave., New York City; Wm. H. Larkin, Nat. Dir.; Wm. W. Perry, Nat. Dir., 76 Cleveland Ave., Binghamton; Gardner C. George, Nat. Dir., P. O. Box 591, Albany; George Barrows, Ex. Sec., 1941 Grand Central Terminal, New York 17.

North Dakota

Mr. John B. Jardine, Pres. & Nat. Dir., 1604 Eighth St., South, Fargo; George Teskey, Sec., 714 Ave. E, Bismarck.

Ohio

John D. Coleman, Pres., 2520 Elsmere, Dayton; John F. Hale, Nat. Dir., 500 Municipal Bldg., Dayton; Lloyd A. Chacey, Ex. Sec., 63 South High St., Columbus.

Oklahoma

L. L. Dresser, Pres., P. O. Box 2518, Tulsa 1; C. S. Worley, Nat. Dir., P. O. Box 1439, Oklahoma City; W. E. Bleakley, Ex. Sec., 410 Commerce Exchange Bldg., Oklahoma City.

Pennsylvania

Leroy F. Christman, Pres. & Nat. Dir., 101 Endlich Ave., Mt. Penn, Reading; J. J. Paine, Nat. Dir., 1430 N. Euclid Ave., Pittsburgh 6; Ray M. Fuller, Nat. Dir., 560 North 16th St., Philadelphia 30; Victor J. Snyder, Ex. Sec., 25 South 3rd St., Harrisburg.

Rhode Island

Richard A. Phelan, Pres., 1063 Broad St., Providence; Henry Ise, 15 Slocum St., Providence; Vincent DiMase, Sec., 201 Dean St., Providence 3.

Texas

W. A. Rounds, Pres., 1710 Fair Bldg., Fort Worth; W. M. Andrews, Nat. Dir., 904 Union Natl. Bank Bldg., Houston; Robert Coltharp, Nat. Dir., 108 E. 10th St., Austin; T. C. Forrest, Jr., Praetorian Bldg., Dallas 1; E. E. Rosaire, Nat. Dir., 3661 Ella Lee Lane, Houston; John J. Ledbetter, Jr., Ex. Sec., 504 Ewell Nalle Bldg., Austin.

Washington

John O. Johnson, Pres., 1626 Calif. Ave., Seattle 6; James G. McGivern, Nat. Dir., Gonzaga Univ., Spokane; DeWitt C. Griffin, Sec., 717 Lloyd Bldg., Seattle 1.

West Virginia

Harry G. Kennedy, Pres., Kanawha Coal Operators Assn., Kanawha Valley Bldg., Charleston; P. K. Pierpont, Nat. Dir., 71[illegible] College Ave., Bluefield; Ross B. Johnston, Ex. Sec., Kanawha Hotel, Charleston.

Wisconsin

Walter A. Peirce, Pres., Manager—Water Department, Racine; A. G. Behling, Nat. Dir., 2326 S. 7th St., Milwaukee 1[illegible] Prof. Ben G. Elliott, Nat. Dir., 2302 Commonwealth Ave., Madison 5; O. J. Muegge, Sec., 656 Crandall St., Madison 5.

Puerto Rico

C. Calor Mota, Pres., c/o Univ. of Puerto Rico, Mayaguez; Salvador Quinones, Nat. Dir., 20 E. Leland St., Chevy Chase, Md.; Angel Silva, Ex. Sec., Dept. of the Interior, Santurce

National and State Society News

NEWS FROM THE WASHINGTON OFFICE

The Summer Meeting of the Board of Directors of NSPE was held at the Hotel Statler in Washington, D. C., July 12th. Preceding the Board Meeting, the State Secretaries met for their Annual Meeting to discuss problems of the administration of our Member State Societies. Both of these meetings are reported in detail elsewhere in this issue of the magazine and hence there will be no coments here on the actions taken. It is well to note, however, that there were many items on the minds of the State Secretaries on which time did not permit discussion because of the one day duration of the scheduled meeting. The State Secretaries almost unanimously expressed a desire for an opportunity for more lengthy discussion of many items and it is hoped that the meeting next year can be scheduled for greater duration.

Solving Problems

The Board Meeting was productive of many items of interest to the membership and it is confidently expected that the recommendations of the various Committees will lead to further progress in solving many of the problems of the engineering profession. The air-conditioning of the Statler Hotel added much to the comfort of those attending and the facilities and accommodations left nothing to be desired.

The Washington Office has just completed a Legislative Bulletin summarizing the activities of the 1st Session of the 80th Congress of interest to engineers. This Bulletin is being reproduced in quantity and supplied to each member State Society for distribution to all registered engineers. Any member who does not receive his copy should address a request to the Secretary's office of his member State Society.

Membership increase continues at the same encouraging rate and the report of the Membership Committee at the Summer Board Meeting indicated all states showing a statistical gain.

Procurement difficulties experienced during the war still plague the Washington Office. The latest difficulty concerns certain vital parts for the operation of the new addressograph equipment which it was anticipated would be available for mailing The AMERICAN ENGINEER. Delivery of this equipment has been postponed since March 15th. However, it is expected that the equipment will be in operation by September 15th. Some members may find delay in receiving their issues of The AMERICAN ENGINEER. In the event that you know of a fellow member who has not received his copies of the monthly publication he should be advised to write the Washington Office which will immediately forward him his missing magazine.

District of Columbia

The D. C. Society Board of Directors agreed to invite chairman of all committees to monthly meetings so that they may discuss and plan various activities. The chairmen will not have any vote on items coming up for consideration of the Directors, but will be present for information and observing purposes.

* * *

The D. C. Registration Bill, which it is hoped will be passed by Congress next session, has been submitted to the D. C. Commissioners for appropriate action.

Regular monthly meetings of the D. C. Society will be resumed in September and will be held on the fourth Monday in each month. The Activities Committee is working on the program for the coming year.

Maryland

The June meeting of the Maryland Society was addressed by Eng'r Paul L. Holland of the Public Service Commission, whose subject was the Amended Registration Law for Professional Engineers in Maryland. Engineer Holland spoke as follows:

The original Registration Law for Professional Engineers in Maryland was not effective as demonstrated by its operation, or lack of operation, during the last seven years. Study of the law reveals the fact that it was not readily enforcable, due to certain obscure definitions, and to exemptions set out therein. One such term of unknown meaning was "Holding himself out as an Engineer." Section 17 exempting persons, corporations and political subdivisions from the necessity of employing professional engineers or land surveyors was included in the original act to prevent opposition from sources such as executives of large industrial corporations and municipal officials who seemed to fear that it would result in increased cost for engineering services or in interference with political appointments. Such a provision has no place in a law providing primarily for professional matters. Section 21 (g) was a "snake" and provided a possible loophole for evasion of the law. The old law gave no recognition to young engineers, recent graduates who lacked the professional experience necessary for registration. This fact was brought out clearly in connection with the work of the National Society of Professional Engineers, on collective bargaining.

The revised statute eliminates many of the shortcomings of the originial law. The revised bill was passed promptly by the Senate, and much credit is due State Secretary John B. Funk for valuable assistance in getting the bill through the Senate. Passage by the House, however, was not so prompt; for a time it appeared as though the bill had been lost in the movement from the House back to the Senate after amendment. After

Coming Events To Remember

National Meetings

December 4, 5 and 6. NSPE Annual Convention, Statler Hotel, Buffalo, N. Y.

much searching and the loss of considerable time it was located and finally passed. The Governor was then urged to sign the bill, which as you now know, he did enacting it into the present Registration Law.

The bill, now a law, revises the various definitions so that now they are intelligible; the practice of engineering is specifically and clearly defined, and the qualifications of the person who may represent himself to be an engineer are clearly set forth. In other words a person who holds himself out as being competent to practice engineering, by letterhead, card, sign, or many means whatsoever, must be a registered engineer within the meaning of the law. It omits certain clauses of the original law which had no bearing on the work of the engineer.

There was as you know, an objection to a registration law in Maryland when this subject was first considered, because it was thought to be a form of labor legislation. Personally I cannot see why there should be any objection to registration legislation on such grounds. Actually the motive behind the laws was entirely professional.

Another change which the revised statute makes is the introduction of clauses which give recognition to the engineer in training. Under the amended law it is now possible for the man recently graduated from college to take an examination given by the State Board of Registration and upon passing the examination he is eligible to a certificate as an engineer in training. After four years of acceptable practice he may then be certified as a Registered Professional Engineer. This change permits the young graduate to complete the more theoretical section of the examination while the subjects taken in his college classes are fresh in his mind and to attain his full status after he has had sufficient experience to apply his theories intelligently in the practice of the profession.

The matter of enforcing the amended law now engages our attention. Engineers are not disposed to resort to snooping; therefore, it appears appropriate that enforcement should be vested in a committee. Such a committee is now in the process of organization; the duty of this body will consist of enforcing the provisions of the amended law. It is my belief that this law will prove effective, that it adequately defines the practice of engineering, and protects the public from the dangers arising due to the practice of engineering by persons incompetent to apply the scientific laws and principles of practice of engineering.

New Jersey

A new Chapter is in the making in New Jersey and will soon be known as the Delaware Valley Society of Professional Engineers. This Chapter comprises the New Jersey counties of Salem and Gloucester, and cures a geographic difficulty that has long existed. The existing South Jersey Chapter covers 7 counties and, for organizational and efficiency reasons, it was long thought advisable to further decentralize. Past President Daniel M. Kramer was greatly responsible in spearheading this movement and when the new Chapter receives its charter in September, the recipient will be the new President, Engineer Perez Collins.

Early in 1947, New Jersey's President Jones appointed a special committee to meet with a similar committee from the New York State Society. The New Jersey Committee is comprised of Engr. Macfarlane as chairman, and Engrs. Negrey and Matte. They were charged with the responsibility of devising a suitable emblem to be used by Professional Engineers on a national basis on automobiles and for other similar purposes. The results of their joint efforts have been submitted to our Board of Trustees and will further be submitted to our entire membership through the medium of the July issue of the "New Jersey Engineer". It is felt that the proposed emblem which has been recommended to NSPE fills a long existing need.

The net NJSPE national membership now exceeds 1,500 and, as a result, New Jersey is entitled to a fourth National Director. Pursuant to this new status, President Jones, at the June Trustees' meeting, formally appointed Engr. Frank C. Mirgain to fill this important office. It is interesting to note in this regard that Engr. Mirgain has recently been promoted to a full professorship at Rutgers University.

The State of New Jersey is now going through history-making days in the form of a Constitutional Convention, the holding of which was dictated by the electorate of New Jersey early in June. NJSPE is proud to announce that the 1st Vice-President of the Convention (which is convening to revise New Jersey's 103-year old constitution) is a fellow member—Engr. Amos Dixon. In addition, Dr. Allan Cullimore, President of the Newark College of Engineering and also a member, has been chosen as a delegate from Essex County.

The engineering profession has already been recognized through an invitation to NJSPE to appear and to give testimony at special Convention Committee meetings on the subject of the diversion of Highway funds. Managing, Director Dodge appeared before the Committee on Taxation and Finance of the general Constitutional Convention.

The Semi-Annual Meeting of NJSPE is scheduled to be held at the Hotel Hildebrecht, Trenton, on September 20th. Tentative plans now call for this meeting to be held in conjunction with the regular Regional Conference generally held in Philadelphia. All out-of-state members are cordially invited to attend.

New York

New York State President Larkin addressed Tri-County Chapter at its June Meeting (on the 12th at Saratoga Lake), and explained the national prestige which will be gained by a successful NSPE Convention at Buffalo. He brought out the problem of raising the convention fund which now faces him and, when he had concluded, the Tri-County group offered a solution in the form of an immediate motion, and unanimous vote, to contribute one dollar for each member of the chapter. The check was sent to State Society Headquarters the following day and forms the nucleus for successful discharge of our obligation. It is hoped that other chapters will adopt a similar procedure, or use their own methods to assure that proper reception of and attention to our prospective visitors will truly reflect the hospitable spirit of individual engineers in New York State.

Nassau and Suffolk County Chapters teamed up in a very successful joint meeting on the evening of June 11. The first affair of this kind to be inaugurated by either chapter, the meetings and following dinner-dance brought out a fine representation of combined membership and guests. A joint program committee comprised of Alexander A. Bearman, Kurt Groepler (Nassau), George P. Kuzmier and Edward J. McGinnis (Suffolk) arranged the event which was held at the Huntington L. I. Yacht Club. The meeting was the final session until early fall for each chapter although both have special committee

or board of director's meetings scheduled in the interim.

Past President Charles W. Burke (Kings) stretched his tenure of office to pay a long-planned call on June 3. He was accompanied on his trip to Binghamton by Mr. Barrows. In his address to the chapter, Mr. Burke reviewed the experiences and accomplishments of the engineering societies at chapter, state and national levels during his term of office, and stressed future possibilities for economic benefit of engineers through the power of organization.

President William H. Larkin got off to an early start on his official duties when he officiated at the installation of Bronx County Chapter's newly-elected officers the evening of June 5. On the same date, Mr. Barrows journeyed to Rockland County Chapter to sit in on its final general meeting of the season.

New York County Chapter held its final general meeting of the season at the Hotel Sheraton, New York City, on the evening of June 10. Newly-elected officers were installed by State President Larkin who also gave a brief talk outlining his plans for the administrative year. Presentation of the scroll was made by State Past President Burke to George M. Bechtel, out-going president.

Schenectady County Chapter was host to the Executive Board at its June Meeting held at the Hotel Van Curler in Schenectady on Saturday, June 7.

Ohio

A petition for temporary restraining order, injunction and equitable relief was filed in the court of Common Pleas of Montgomery County on July 8 by the Dayton Society of Professional Engineers, the Ohio Society of Professional Engineers and E. L. Luaces as co-plaintiffs against Spraley Brothers Co., Joseph L. Spraley, Margaret Spraley and Cletus F. Spraley all of Dayton, Ohio.

The petition alleges that Spraley Brothers Co. has represented and fraudulently advertised itself as competent to engage in engineering practice without being legally entitled to engage in such practice and that the individual defendants have combined and conspired through the corporate defendant to violate the Engineers and Surveyors Registration Act. It prays that the defendants be restrained and enjoined from further violation of the act; that the corporation be directed to surrender its charter for unlawful use, misuse and abuse of the powers and privileges conferred by it; and that the defendants pay the court costs and reasonable attorney's fees.

The Dayton Society and Ohio Society of Professional Engineers are represented by Judge William L. Struck and Hubert M. Kline of Dayton and Harvey R. Hawgood of Cleveland, while E. L. Luaces of Dayton represents himself. Kline, Hawgood, and Luaces are all members of the Ohio Society of Professional Engineers.

The 97th General Assembly, now adjourned, considered a number of bills of special interest to the Engineer. Among those enacted into laws are the Elective Officers Salary Bill which provides for a minimum of $3000.00 with a $7200.00 maximum for County Engineers. Another bill passed provides for a 33 1/3 per cent increase for appointive Statutory State Officials. Division Engineers are included in this group, who up until this time, had received no salary adjustment.

The general appropriation bill includes an 8 1/3 % increase, retroactive to the beginning of the year, for State Employees. Increase to be based on the employee's base pay as of March 15, 1947 or date of subsequent appointment. This is an addition to previously enacted legislative increases. It falls short of the recommendations of the O. S. P. E. salary study committee but it does offer some relief to the State highway Engineers.

The bill amending the Registration Act failed to pass. It is believed that the bill as originally introduced asked for too much and that if it had been introduced as finally amended it would have passed.

Pennsylvania

The Pittsburgh chapter held its regular June meeting at the General Broadhead Hotel in Beaver Falls, Pennsylvania. This was done to permit the Beaver Falls members to attend a meeting in "their own backyard."

* * *

The Pittsburgh chapter has started a survey of fees as listed in "Schedule of Minimum Engineering and Survey Fees and Salaries, PSPE, 1947." A report on this survey will be made at an early meeting. Meanwhile, until a revision is made, the portion of the schedule relating to minimum fees for surveying services is inoperative and services covered by it shall be charged at actual cost plus 100 percent for overhead and profit.

* * *

The Lincoln chapter of the PSPE held its first annual meeting in York, Pennsylvania. Following dinner, new officers were elected for the coming year.

Texas

A new Texas unit—the Lower Rio Grande Chapter—has been organized. It will be the eighteenth chapter of TSPE and will include professional engineers from the following counties: Zapata, Jim Hogg, Brooks, Kenedy, Starr, Hidalgo, Cameron, and Willacy.

The new group will complete the professional organizations in Texas unless it becomes desirable to subdivide one of the existing chapters, according to information from the state.

Fifty-one engineers met in Weslaco for the organizational meeting. Twenty-one were already members of other Texas chapters of the Society.

Main credit for organization of the new group, according to responsible TSPE representatives, goes to P. V. Pennybacker, chairman of the State Society's Publication's Committee. Mr. Pennybacker was especially commissioned by the TSPE President to organize the new group. He held preliminary meetings with professional engineers in the valley in May and arranged for the organizational meeting that was held in Weslaco in June. W. N. Harris, city engineer of McAllen, Texas, aided Mr. Pennybacker in his organizational work.

Organization of the new chapter brings the total membership of the Texas Society to 1,853. Of these, 5 are honorary members, 86 Junior members and one a contributing member.

Wisconsin

Jerome C. Zufelt, superintendant of the Water Department of Sheboygan, Wisconsin, addressed the June 12 meeting of the Milwaukee chapter on, "Fluorination of Water to Prevent Dental Caries." Sheboygan, the first city to fluorinate its water independently, has been adding flourine for about one year. A brief business session was also held at this meeting, following which Mr. Herbert C. Schmitt, assistant superintendant of filtration, Milwaukee Water Department, introduced the speaker.

What's New For Engineers

Requests for further information concerning any item mentioned under this heading will be promptly referred to the manufacturer. It would be appreciated if inquiries be addressed on professional or company letterhead.

Send Inquiries Direct to American Engineer, 1359 Connecticut Ave., Washington, D. C.

NEW METALLIC LUBRICANT*

The production of a relatively new lubricating grease, to be employed on all open gears and bearings, has been announced by this concern, and presented as the closest approach to a permanent lubricating medium that has been achieved. The product is a mixture of extremely fine metallic lead powder, and a high grade lubricating grease. It has been employed in the mining industry for about ten years prior to its introduction into industrial fields. Recommended for use on open gears and bearings in ball mills, hoists, pumps, kilns, rolling mills, in the production of wire rope, for dredging equipment, chain drives and for cranes. After a period of use the lubricant will form a coating of metallic lead over all gears and bearing surfaces. When this lead coating is formed, the requirements for additional grease will have been reduced to an absolute minimum with savings, depending on equipment, up to 80%, compared to previous grease consumption. The lead coating fills all score marks, pits, grooves or other imperfections, which results in reducing friction to a minimum on all wearing parts. The lead coating, which is continually renewed by occasional applications of Lead-Lube, as the product is known, also reduces shock and noise, eliminates uneven wear, and generally improves plant housekeeping, in that the product is extremely "clean," but well greased.

For further information address American Engineer, reference No. 800.

FLUXING AND BRAZING COMPOUND*

A new combination fluxing and brazing compound for use in gang brazing operations where several parts are to be brazed at the same time has recently been developed. It can be used with any common heating method, torch, furnace or induction. Containing the powdered metal in combination with the powdered flux, it can be mixed with water to form a smooth paste. This may be brushed on the work at any time prior to the atcual brazing. It covers and spreads well and will remain in place during the usual manufacturing operation. Under the heat of brazing, the product melts readily to a liquid or low. surface tension and low viscosity which flows over the surface to be brazed and penetrates into joints and between contacting surfaces. At the temperature of brazing, it is extremely active in cleaning all surfaces to prepare them for the union with brazing metal. The finely divided condition of the alloy causes it to meld rapidly under the heat. Covered at all times by the molten flux, it does not develop heat oxides.

For further information address American Engineer, reference No. 801.

FUEL OIL CLEANER*

Of interest to production men using oil for fuel is a new liquid fuel oil treatment which cleans the entire fuel system from storage tank to burner tip and reduces the fireside cleaning to a matter of ordinary brushing or blowing. Added to fuel oil in the ratio of 1 quart to 1,000 gallons of fuel oil, this treatment starts immediately to dissolve sludge and to emulsify water and oil so that water and sludge are consumed as the fuel oil is burned. Continued use of this treatment eliminates manual sludge removal. In the process of burning, fuel oil so treated, generates a chemical gas which reduces soot to fine carbon particles which are generally carried away by the smoge or removed by brushing or blowing. When fuel oil is treated regularly, soot does not build up on the heating surfaces. This fuel oil treatment is harmless to metals and is non-coroding.

For further information address American Engineer, reference No. 802.

NEW ALUMINUM SURFACER*

It is now possible to produce on aluminum the superior type of coating hitherto associated only with anodic treatments and to do it simply, rapidly and economically. This is done through Alodizing (a trademark of this company). It is essentially a chemical process, requiring no electricity for its operation. It can be used advantageously for excellent protection against corrosion, both on painted and unpainted aluminum. Comparative salt spray tests have exceeded requirements. Panels so treated have lasted for over 2,000 hours in a salt laden atmosphere. Unpainted panels in many cases have outlasted anodically treated panels subjected to the same corrosive environment. Unlike conventional electrolytic and chemical processes, however, this process does not produce an oxide coating. A thin, tough skin positively integrated with the metal is formed by the interaction of aluminum and the product's chemicals. Outstanding characteristics of

*** Items so marked are furnished by the editorial staff of the magazine *Production Equipment*.**

KENNEDY-RIEGGER DRILLING CO., Inc.

Diamond Drill & Core Borings

TEST BORINGS

5418 Post Road New York City

Telephone KI 9-8458

THE WIESNER-RAPP CO., Inc.

Designers and Builders

of

Chemical Processing Equipment

and

Textile Finishing Machinery

212 WINCHESTER AVE. BUFFALO 11, N. Y.

PRINTED BY WATKINS PRINTING CO., BALTIMORE

this skin are its stability, flexibility and adherence which enable it to withstand all manner of shocks caused by bending and denting. Aluminum to be so coated is treated for two minutes or less in a chemical solution heated to a temperature no higher than 120° F. The next stage consists of either drying—if the work is to be exposed unpainted; or rinsing—if the work is to be painted or waxed. This method coats and seals simultaneously. By minimizing space and time expenditure, this method permits a considerable saving in operating overhead. Metal fabricators, using aluminum extensively, find a variety of possible applications of this new coating process. Other possibilities include: aircraft parts, truck panels, metal tiles, Venetian blind slats, outboard motors, cabinets, furniture, to mention but a few. Application may be made in either a spray or an immersion process and to either parts or continuous strip. Another economy is represented in the paint-receptive surface afforded by treatment with the products. Whereas phosphate-coated, phosphatized, chromatized or chemically cleaned aluminum generally requires a priming coat of paint. Alodized surfaces do not. However, the use of a prime coat over metal so treated is not harmful.

For further information address American Engineer, reference No. 803.

NEW ANGLE LEVEL

A new angle level has been designed combining in one handy tool the features of the old style level and angle gage. (Photograph below).

For further information address American Engineer, reference No. 804.

AIR HEATER BULLETIN

Publication of a new 16-page bulletin describing a tubular air heater discusses the economic and engineering factors involved in the selection of air heaters and illustrates various types of construction which are available. Numerous illustrations show their application to actual installations. Interesting and valuable charts and tables are also included for the several technical considerations necessary in the application of air heaters.

For further information address American Engineer, reference No. 805.

PROFESSIONAL DIRECTORY

FRAZIER-SIMPLEX, INC.

436 East Beau Street

WASHINGTON, PENN.

Contracting and Consulting Engineers to the Glass and Steel Industries.

C. M. HATHAWAY

Consulting Engineer

● PRODUCT DEVELOPMENT ● PROJECT ENGINEERING ● PRODUCTION DESIGNS
● PLANNING ● TOOL AND METHODS ENGINEERING
ELECTRICAL – MECHANICAL – ELECTRONIC
facilities for research, model work & pilot manufacturing
1315 S. CLARKSON STREET ● DENVER 10, COLORADO

PRESTRESSED CONCRETE

Shallow, crackless construction for heavy engineering. Long span traffic and pedestrian overpasses, trestles, underground garages and tunnels, piers and bulkheads, dams, airports, containers and ducts for liquids under pressure.

Detailed design and field supervision.

L. COFF, Consulting Engineer
198 BROADWAY, NEW YORK 7, N. Y.
Telephone: COrtland 7-2753

JAMES F. FOUHY
P.E. No. 7816

Attorney and Counsellor at Law
New York, Massachusetts, Federal Bars
Engineering and General Practice
Woolworth Building New York City

STIRLING BOILER

A new bulletin has been announced describing a relatively small, water-tube boiler unit, designed primarily for installation where headroom is limited. It is particularly suitable for industrial power plants, for process steam requirements, for smaller central stations and for heating purposes. It is also admirably adapted to the modernization of smaller power plants. This boiler requires little headroom, can generally be installed with minimum alterations to existing buildings, can be built for any fuel or method of firing and may be set singly or in battery. The bulletin describes this boiler completely, cites several typical installations and includes dimensional data for the various sizes and capacities of the unit.

For further information address American Engineer, reference No. 806.

MADIGAN-HYLAND

Consulting Engineers

28-04 41st Avenue
Long Island City, New York

PARSONS, BRINCKERHOFF, HOGAN & MACDONALD

ENGINEERS

Traffic Reports	Bridges
Valuations	Tunnels
Power Developments	Subways
Industrial Buildings	Foundations
Water Supply	Dams
Harbor Works	Sewerage

142 Maiden Lane, New York
Calle Sur 17 No. 27, Caracas, Venezuela
Edificio Suarez Costa, Bogota, Colombia

DE LEUW, CATHER & COMPANY

Consulting Engineers

Transportation, Public Transit and Traffic Problems

Railroads	**Grade Separations**
Major Thoroughfares	**Expressways**
Subways	**Tunnels**
Power Plants	**Municipal Works**

20 North Wacker Drive, Chicago 6, Ill.

WILLIAM C. KAMMERER and Associates

CONSULTING ENGINEERS

Power Plants—Design, Supervision of Construction, Reports, Examinations, Investigations, Indutrial and Public Utilities.
1900 Euclid Avenue, Cleveland 15, Ohio

D. B. STEINMAN

Consulting Engineer

BRIDGES

Design - Construction - Investigation
Reports - Strengthening Advisory Service
117 Liberty Street NEW YORK CITY

STEAM ATOMIZING OIL BURNER

A new bulletin just issued describes the construction, application and advantages of the Wide Range Y-Jet Steam Atomizing Oil Burner. The burner has established an excellent standard of performance in both marine and stationary plants by providing high combustion efficiency over a wide range of boiler ratings without changing the number of oil burners in operation or the sizes of the sprayer plates. Burners now installed are operating at capacities ranging up to 6,000 lbs. of oil per burner per hour.

For further information address American Engineer, reference No. 807.

...the world's greatest radio networks

...most efficient office buildings

partners in creating

● The habit of accuracy is so strong in engineers that drawings which are merely clear and legible are not enough. Creative men want their drawings to look professional, not only in essentials, but in details. K & E has equipment that can help you in both endeavors... drawing instruments and materials so well conceived and precisely made that many engineers and draftsmen regard them as valued partners throughout their professional careers.

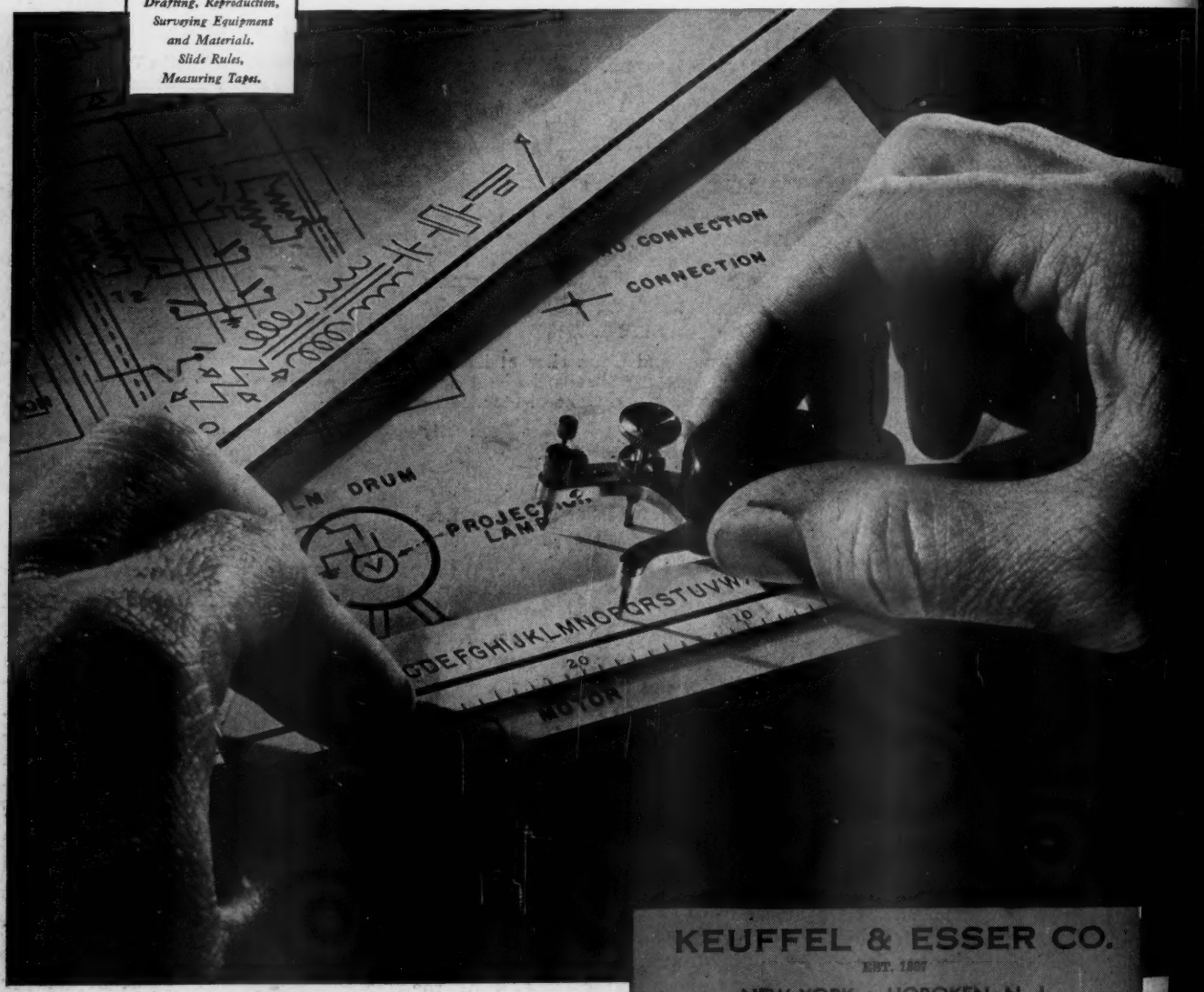
For 78 years K & E products have been helping in this way to bridge the gap between thinking and doing, helping to make possible the tools, machines, appliances, construction projects, that mark our civilization. So widely is this true, it is self-evident that every engineering project of any magnitude has been completed with the help of K & E. Could you wish any surer guidance than this in the selection of your own "partners in creating"?

For faster, better lettering you will find a LEROY† Lettering Set a tremendous help. With it you can produce a wide range of lettering styles and symbols with complete uniformity. Precision lettering need no longer be tedious. For full information write to your nearest K & E Distributor or to Keuffel & Esser Co., Hoboken, N. J.

†Reg. U. S. Pat. Off.

K+E

Drafting, Reproduction, Surveying Equipment and Materials. Slide Rules, Measuring Tapes.



KEUFFEL & ESSER CO.

EST. 1867

NEW YORK • HOBOKEN, N. J.

CHICAGO • ST. LOUIS • DETROIT • SAN FRANCISCO

LOS ANGELES • MONTREAL